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WILDLIFE AND HABITAT INVENTORY FOR BACA AND PROWERS COUNTIES COLORADO

by

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WILDLIFE AND HABITAT INVENTORY FOR BACA AND PROWERS COUNTIES, COLORADO

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Abstract: An inventory for Baca and Prowers Counties was conducted on the lesser prairie chicken (Tympanuchus pallidicinctus), which is a threatened species in Colorado. Other species given special consideration in this report include the black-tailed prairie dog (Cynomys ludovicianus), burrowing owl (Speotyto cunicularia hypugaea), scaled quail (Callipepla squamata), golden eagle (Aquila chrysaetos), ring-necked pheasant (Phasianus colchicus), bobwhite quail (Colinus virginianus), mountain plover (Eupoda montana), long-billed curlew (Numenius americanus), and Mississippi kite (Ictinia misisippiensis). A total of 15 booming grounds were found and 211 lesser prairie chicken cocks were counted. It is estimated that there are approximately 425 lesser prairie chickens in the two counties. Four booming grounds were located on private land and 11 grounds were on U.S. Forest Service land. No booming grounds or nesting sites were located on BLM land or on land for which the BLM has subsurface mineral rights. No sign of black-footed ferrets was observed on 30 black-tailed prairie dog towns. The majority of these towns were small and in most cases prairie dog populations were decreasing. Nesting populations of golden eagles, burrowing owls and Mississippi kites were found and mapped. Big game species and predators seen were recorded as to numbers and locations. Waterfowl, passerines, shorebirds, reptiles, amphibians and fish were also recorded. Of the 445 hectares (1100 acres) of BLM land in Baca and Prowers Counties, 249 hectares (815 acres) were considered habitat able to support wildlife typical of the surrounding areas. Approximately 330 hectares (815 acres) are currently being considered for transfer to the Colorado Division of Wildlife.

Introduction

This report includes a complete wildlife inventory on all Public Land and mineral estate within Baca and Prowers Counties, Colorado. All wildlife species and habitat have been included in this inventory with special consideration given to those species that are on Colorado or Federal "Threatened and Endangered Species Lists " (Appendix A).

Objectives were as follows:

1. To provide critically needed inventory data on all wildlife species and habitat within the subject areas of Baca and Prowers Counties, for use in the BLM's resource planning and management.

2. To provide basic guidance useful in analyzing energy/minerals development impacts on wildlife habitat management, particularly in reference to threatened and endangered species.

3. To provide basic guidance in determining wildlife values in reference to decisions on retention or disposal of NRL in Baca and Prowers Counties.

4. To establish lines of communication between BLM, USFS, Colorado Division of Wildlife, and other concerned groups, agencies, and individuals to coordinate future monitoring and management of lesser prairie chickens in Baca and Prowers Counties.

From February 22, 1977 until June 17, 1977 a field inventory was conducted to obtain the following information:

1. Delineate all wildlife habitat sites on lands for which BLM has surface or mineral estate responsibility.

2. Identify and record all wildlife sightings by species, habitat sites and seasons of use.

3. Locate and record all lesser prairie chicken booming grounds, nesting sites, and other use areas (give special consideration to locating all habitat - existing, past and potential - that involves lands where BLM has responsibility).

4. Locate and record all prairie dog towns. Search each prairie dog town for signs of black-footed ferret activity.

5. Contact and establish a good rapport with local landowners, USDA Forest Service, Colorado Division of Wildlife, and other concerned groups and individuals.

6. Evaluate each tract of mineral estate as to its suitability for oil and gas leasing and exploration.

7. Evaluate each tract of NRL that is administered by the BLM as to its desireability for retention or disposal.

The above census was taken in Baca and Prowers Counties which are located in extreme southeastern Colorado. Of the nearly 840,000 hectares in Baca County the BLM owns 139.8 hectares and has mineral responsibility for 89,027 hectares. Prowers County covers 435,198.7 hectares of which 313.3 is BLM owned and 17,633.2 hectares is BLM mineral estate.

Both Baca and Prowers Counties' major source of income is from agriculture (Appendix B). The counties' combined, total 10,854.69 km^2 with a population just under 18,000. The average annual rainfall is less than 38 cm with an annual mean temperature of 12° C.

Lesser Prairie Chicken

Introduction

The lesser prairie chicken (Fig. 1) was once quite numerous in the southeastern part of the state, especially in the area south of the Arkansas River. Hoffman (1963) indicated that this species was probably once found in at least six counties: Baca, Prowers, Bent, Kiowa, Lincoln and Cheyenne (Fig. 2).

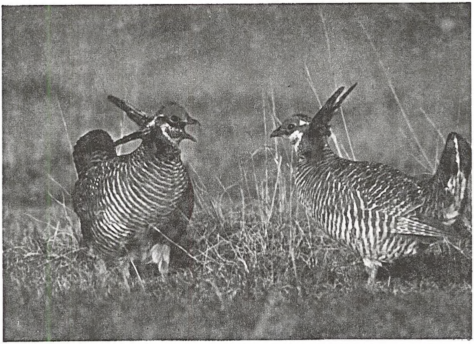

Fig. 1. Two cocks defending their territory.

The first record of the lesser prairie chicken in Colorado was a male collected in Baca County on May 24, 1914 by Fredrick Lincoln from The Denver Museum of Natural History. During September of 1914, he reported sighting many lesser prairie chickens in the sandhill region in Prowers County south of the Arkansas River in the vicinity of Holly.

In early December of 1923, Dr. Alfred M. Bailey collected a number

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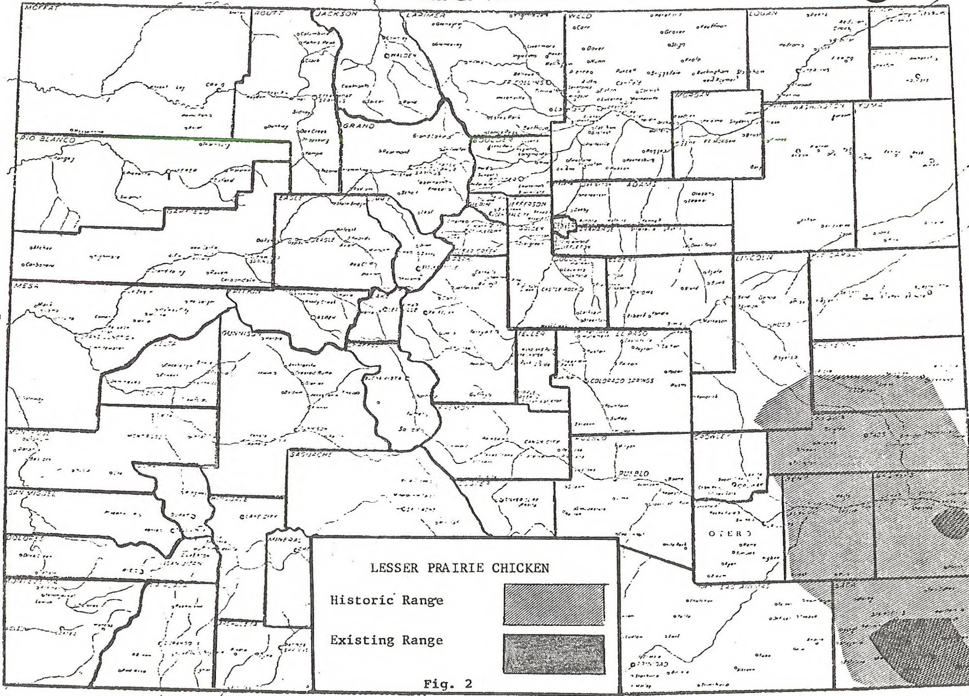

Fig. 2

of study skins in Baca County for the Denver Museum of Natural History. During this period he found rolling, unbroken land with waving bluestem grass (*Andropogon* spp.), yucca (*Yucca* spp.), and sand sagebrush (*Artemisia* spp.).

Early-day populations were undoubtedly highest within the occupied range south of the Arkansas River, but information indicates that the lesser prairie chicken probably also occurred north of the Arkansas River into Kiowa, Cheyenne, and Lincoln Counties (Hoffman 1963).

By 1930, cultivated land was encroaching on grasslands in southeastern Colorado to the point of restricting the lesser prairie chicken's range. In the meantime the lesser prairie chickens had established the habit of feeding on winter grains in the area. Finally the great drouth beginning in 1934 worsened the plight of the lesser prairie chicken by depressing the population dramatically (Jackson and DeArment 1963). Before the great drouth, flocks of lesser prairie chickens numbering in the hundreds were common in the sand sagebrush-grassland belt in Baca County. Several large flocks were observed in the area southwest of Pritchet, Colorado.

In early 1940, a resident of Las Animas, Colorado, observed a flock of 17 lesser prairie chickens near Keller, located 4.8 kilometers east and 3.2 kilometers south of Las Animas in Bent County. Hunters apparently eliminated this flock. This was the farthest west that the species has been reported in the area south of the Arkansas River (Hoffman 1963).

Historically, the lesser prairie chicken is thought to have occurred in both the mixed prairie communities and the sand sagebrush-grassland communities. Drouth and land-use practices contributed to a

transition of mixed prairie communities to shortgrass communities. With the change to shortgrass prairie and farmland, the mixed prairie range apparently became less favorable for lesser prairie chickens, and the flocks slowly disappeared (Graul 1976).

Small populations of lesser prairie chickens have survived over the years in localized areas of suitable cover within these ranges. Most of these areas are isolated with a limited amount of human interference (Hoffman 1963).

Currently the lesser prairie chicken is located in five states: Colorado, Kansas, New Mexico, Oklahoma and Texas (Fig. 3).

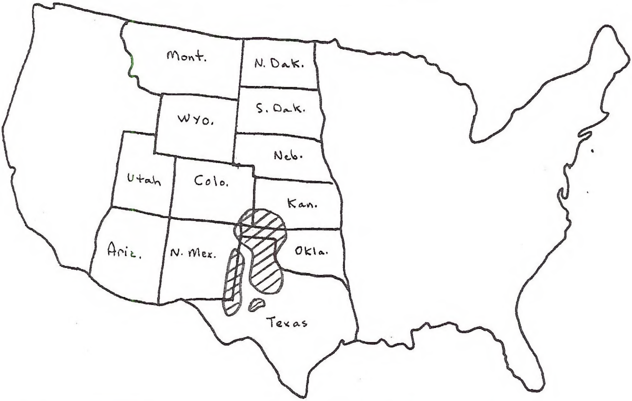

Fig. 3. Present range of the lesser prairie chicken in the United States.

In Colorado the lesser prairie chicken is located in two general areas. The boundaries of the smallest population, near Holly in Prowers County are: from Holly South on Highway 89 11 kilometers, east 6.4

kilometers, north to Highway 50, west back to Holly. This boundary encompasses 72 Km^2 of land. Only one booming ground is located in this area. The second population is located in the Campo area of Baca County and consists of at least 14 booming grounds. The boundaries of the Campo population are: south of Pritchett to the Oklahoma state line, east to the Kansas State line, north to the junction where highway 160 crosses the Colorado-Kansas state line, west along highway 160 back to Pritchett. Included in this area is 3,740 Km^2 of land.

Habitat Requirements and Limiting Factors

The lesser prairie chicken appears to be highly selective of its habitat. Habitat is considered here to be the place where the species' population finds the resources to carry out all its life activities. There must be elements within the habitat to meet adequately the bird's need for food, shelter and reproduction. Present-day populations in Colorado prefer the sand sagebrush-grassland plant communities (Fig. 4 and 5) characterized by an overstory of taller grasses such as western wheatgrass (*Agropyron smithii*), little bluestem (*Schizachycium scoparium*), sand dropseed (*Sporabolus cryptandrus*), needle and thread (*Stipa comata*), red threeawn (*Aristida longiseta*), galleta (*Hilaria jamesii*) and an understory of short grasses such as blue grama (*Bouteloua gracilis*) and buffalo grass (*Buchloe dactyloides*). Sand sagebrush (*Artemisia filifolia*) is very important to the lesser prairie chicken because it provides critical yearround cover (Hoffman 1963).

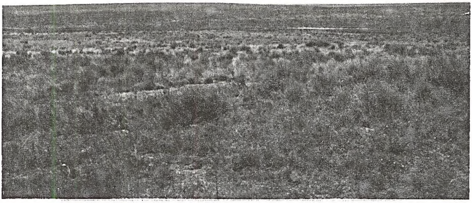

Fig. 4. Typical lesser prairie chicken habitat.

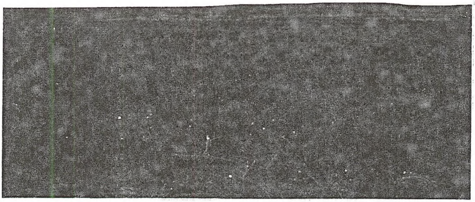

Fig. 5. Sand sagebrush - grassland plant community in Baca County, Colorado.

Grassland is considered essential habitat for the lesser prairie chicken as it is the keystone of their ecology. Jones (1963) stated that such qualities as height and density of grass, and the land-use practices in which it is involved, seem clearly to be more important to the lesser prairie chicken than vegetative species composition.

Essential habitat consists of those portions of the existing range that meet one or more of the following criteria:

1. Lesser prairie chickens known to reside in the area.
2. Area is part of a habitat segment of at least 135 hectares in size that is covered by moderately to light grazed sand-sagebrush vegetation.

The birds are only found in the preceeding habitat when it is not subject to frequent heavy grazing. Areas with less than 63% native rangeland appear incapable of supporting stable populations of lesser prairie chickens. Minimum-tillage farming enhances food availability. Shown in Fig. 6 is the interspersion of vegetative cover types in Baca County. A minimum of 2 sections (534 hectares) of quality habitat should be maintained to insure the existence of a given population (Graul 1976). Appropriate grassland management is essential for the survival and perpetuation of the lesser prairie chicken. The decline in numbers of the lesser prairie chicken in Colorado has been attributed to pasture depletion during the severe drouth and dust bowl conditions of the 1930's and continued plowing of the land. During this time the st ands of taller grasses within the sand sagebrush-grassland areas, were reduced to the extent that many were replaced by undesirable weeds (Hoffman 1963).

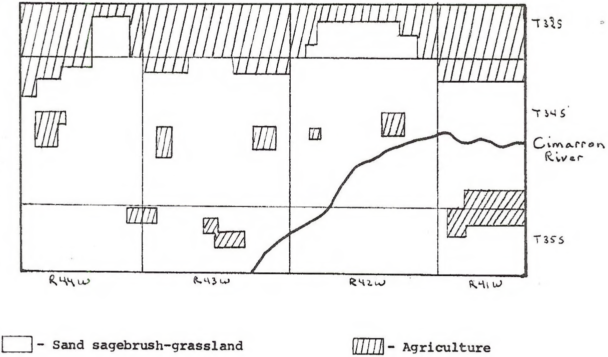

Fig. 6. Interspersion of vegetative cover types within an area of occupied lesser prairie chicken range in southeastern Baca County.

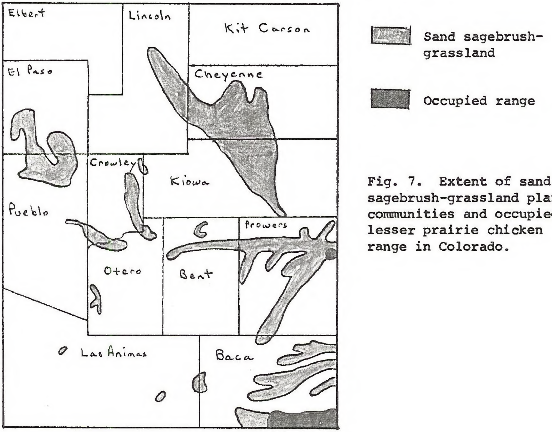

Fig. 7. Extent of sand sagebrush-grassland plant communities and occupied lesser prairie chicken range in Colorado.

Figure 7 shows the extent of the sand sagebrush-grassland community in eastern Colorado. The lesser prairie chicken population fluctuates widely, these fluctuations perhaps resulting from the birds dependence on mid and tall grasses occurring in the sand sagebrush-grassland type.

Continued breaking of the land will create a habitat in which the bird cannot exist. If the lesser prairie chicken is to survive, relatively large tracts of native rangeland must be maintained (Crawford and Bolen 1975).

Census Method

A spring count of cocks was conducted on booming grounds in the Campo and Holly areas. Counts on booming grounds were started in late March and were continued through April and May. The known occupied range was covered each week and surveys to locate new populations were accomplished. Activity on the grounds may begin as early as mid-March but usually starts somewhat later. Birds are seen concentrating on the grounds during the last week in March. Birds use the grounds regularly in April, with activity continuing through late May. Peak activity occurs in April (Copelin 1963).

The vegetation type most used by the lesser prairie chicken for courtship is the shortgrass association (Jones 1963). Hoffman (1963) found that the same booming grounds are used with a high degree of consistency from year to year after establishment (Fig. 8). The booming grounds were typically found on high ground, usually on ridges where short vegetation and elevation combined to give good visibility. Booming grounds were located at the highest point of a particular ridge, but only where the short vegetation occurred (Fig. 9). Occasionally a booming ground was located on the side of a hill or in a lower area when

no suitable shortgrass areas were present on ridges.

Fig. 8. Lesser prairie chickens on booming ground.

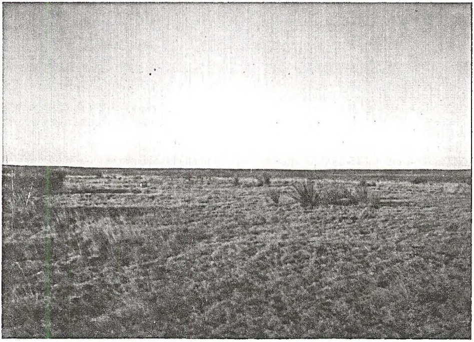

Fig. 9. Typical booming ground on a high ridge in short vegetation.

The best booming ground counts were made on clear, calm mornings when the cocks were most active. At these times booming began a half hour before sunrise and continued for about two hours after sunup. On calm, cloudy mornings booming commenced later but frequently continued three to four hours into the morning. However, because of the atmospheric conditions it was much harder to hear the chickens booming on cloudy mornings.

The procedure used to locate new grounds was to drive or walk through the area to be checked, stopping and listening regularly for the distinctive booming sounds of the lesser prairie chicken which sounded much like a turkey gobble. When these distinctive sounds were heard, the ground was then located as soon as possible by driving or walking to it for a count of the birds. The location of the new ground was then mapped, using mileages and landmarks from U.S.G.S. topographical maps.

The number of cocks and hens on the grounds were determined when possible, with total counts made by flushing the birds from the ground. On each ground the highest count of cocks was used for determination of the population estimate. Previous studies indicate birds seldom switch booming grounds during the booming season (Jackson and DeArment 1963).

Hens were identified by the shorter pinnae (neck tufts), lack of air sacs, and they were normally much less active than the males while on the booming grounds.

About two weeks after the conclusion of booming rituals an attempt was made to locate lesser prairie chicken nesting sites. Jones (1963) indicated that the lesser prairie chicken prefers to nest in heavy cover on the north slope of a ridge no farther than one half kilometer

from the booming ground. Areas of this type were found and searched for nesting birds.

Results

During the spring of 1977 a total of 217 lesser prairie chickens were counted on 15 different booming grounds (Table 1). Fourteen of these grounds were located in the Campo vicinity while one large ground was found southwest of Holly. Based on a 1 : 1, male: female sex ratio this would give a total population estimate of 434 birds. According to U.S. Forest Service counts and estimates the population at this time has increased by about 50 birds from 400 in 1976 to 450 birds at present (newspaper article dated 18 May 1977, Lamar Daily News).

During the booming season the cocks averaged 14.5 birds/ground. In an area 39 Km^2 in size, which included the best prairie chicken habitat, 110 cocks were counted. This is a density of 2.8 cocks/Km^2. Including hens and cocks, there is a total density of 6 birds/Km^2. The majority of the booming grounds were concentrated in this 29 Km^2 area. The average distance between booming grounds was 1.8 Km (Table 1).

Four booming grounds were located on private land accounting for 98 birds. Eleven grounds were located on U.S. Forest Service land which supported 119 birds.

No lesser prairie chicken nests were found during the inventory. Bent (1932) stated that "vegetation in which nests are found, their extreme concealment and the behavior of the incubating hen make it very unlikely that nests will be discovered." Appendix C contains a complete report on all booming grounds.

Booming Ground #	Lesser Prairie Chicken #'s	Nearest Booming Ground (in km)
1	16	0.9
2	10	0.9
3	14	4.9
4	18	0.8
5	3	0.8
6	20	1.7
7	8	1.2
8	13	1.2
9	7	1.1
10	18	1.1
11	21	2.2
12	1	3.6
13	6	3.6
14	2	> 5
15	54	> 5

Table 1. Booming ground numbers, number of birds at each ground and distances to nearest booming grounds.

Lesser Prairie Chicken Behavior

Lesser prairie chicken behavior was observed from a blind 15 meters from the booming ground perimeter (Fig. 10). The booming grounds were approached about one half hour before sunrise flushing the birds as the blind was set up.

The birds would normally fly about 90 meters. The first birds back were always the dominant males which occupied the choice booming sites. Most often the birds would walk back to the ground but they occasionally flew back.

The highest ground was the most preferred. Several times individual birds were seen sitting on top of dead yucca. At other times birds were seen perched on fence wires which ran through one booming ground. First impressions were that the birds did this in order to watch for predators from outside the area. After more observation it

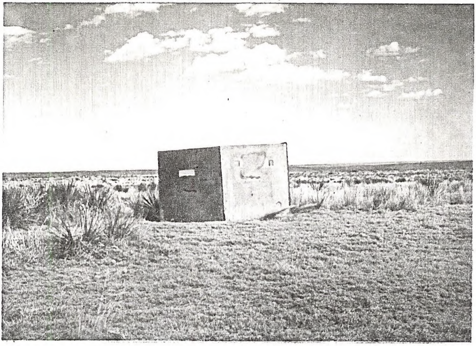

Figure 10. Portable observation blind on perimeter of booming ground located on slightly elevated terrain in Baca County, Colo.

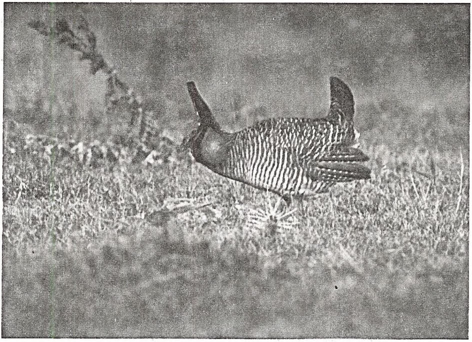

Fig. 11. Lesser prairie chicken cock in display.

was observed that the birds continually watched the other cocks and even boomed occasionally from these perches.

Each cock appeared to occupy an area the shape of a circle two meters in diameter. This is where the booming took place (Fig. 11).

Each bird defended its territory by chasing others from the area. When challenged the birds faced each other clucking and stomping (Fig. 12). Occasionally they would beat their wings and jump into the air. Actual

Fig. 12. Territorial dispute between two cocks on the booming ground.

contact between birds was rare. At any one time about 80% of the lesser prairie chickens boomed at the same time. The most intense activity occurred with the birds in the center of the ground with birds on the perimeter much less active.

On only a few occasions were hens seen among the males on the booming

grounds. When present they strutted slowly, apparently looking over the males. As the females approached, the cocks would run near the hens, booming violently, strutting and displaying for the hens. It did not appear that any one male was preferred for mating purposes.

At the height of the booming season birds were easily approached and reluctant to flush from the ground. A pickup was driven to within 30 meters of several grounds. When approached on foot the lesser prairie chickens flushed much sooner and would not return to the ground until the observer was not visable.

The long term effect of man's interference on the lesser prairie chicken has not been fully determined. Colorado Division of Wildlife (C.D.W.) personnel have observed numbers on a frequently disturbed ground were reduced by one to three birds per year. Nearby grounds may have picked up a few birds so it was believed the birds changed booming grounds between years and were not reduced in actual numbers. Excessive human presence while the lesser prairie chickens are on the grounds in the spring could cause abandonment.

Predators and Lesser Prairie Chickens

During the booming season the lesser prairie chickens appear to be quite vulnerable to predation. Because of the strategic locations of booming grounds, high ground and low vegetation, predation is minimal. On several occasions coyotes (*Canis latrans*) and marsh hawks (*Circus cyaneus*) were observed with an opportunity to prey on a lesser prairie chicken. The coyotes seemed unconcerned with the lesser prairie chickens and directed their efforts elsewhere. At one point a coyote

was observed sleeping in a clump of yucca 18 meters from an active ground. The coyote, when disturbed, ran through the booming ground and didn't appear to notice the birds. The lesser prairie chickens were unconcerned when the coyote passed within 10 meters of them. In another instance, while observing a booming ground, a marsh hawk flew directly over the ground causing the birds to flush. The hawk did not make any attempt to pursue the birds. The lesser prairie chickens soon returned and continued booming.

As a result of the observations and a short literature search on the subject it was concluded that very few birds are killed by predators while on the booming grounds.

Soils and Lesser Prairie Chickens

Soil association appears to be important to lesser prairie chicken populations as it determines vegetation type. Previous studies indicate a positive correlation between sandy soils and the sand-sagebrush community (Crawford and Bolen 1976). Observations on this study also appeared to confirm this fact. Three soil associations were found in Baca and Prowers Counties which supported the sand sagebrush-grassland community (Appendix D). They are listed below with a description of each.

Vona-Manter-Dalhart Association: deep, nearly level to gently undulating sandy loams and loamy sands on upland.

Otero-Potter Association: deep and shallow, undulating and rolling loams and gravelly loams on uplands.

Tivoli-Vona Association: deep soils of the sandhills.

Where these three soil associations occurred the sand sagebrush-grassland community was common if the area hadn't been plowed under. Several of the most important plant species for the lesser prairie chicken thrived in this community which occurred in the sandy soils (Table 2).

Grasses:	Western Wheatgrass	(*A gropyron smithii*)
	Red threeawn	(*Aristida longiseta*)
	Sideoats grama	(*Bouteloua curtipendula*)
	Buffalo grass	(*Buchloe dactyloides*)
	Blue grama	(*Bouteloua gracilis*)
	Foxtail Barley	(*Hordeum jubatum*)
	Ring Muhly	(*Muhlenbergia torreyi*)
	Indian Ricegrass	(*Oryzopsis hymenoides*)
	Little Bluestem	(*Schizachyrium scoparium*)
	Sand dropseed	(*Sporobolus cryptandrus*)
Shrubs:	Sand Sagebrush	(*Artemisia filifolia*)
	Rabbit-brush	(*Chrysothamus nauseosus*)
	Pricklypear	(*Opuntia polyacantha*)
	Yucca	(*Yucca glauca*)

Table 2. Plant species associated with the sand sagebrush-grassland community in southeastern Colorado

Copelin (1963) believed that lesser prairie chicken population density was influenced more by a combination of soils, vegetation and land use than by vegetative type alone.

Discussion

The lesser prairie chicken must be considered rare in Colorado at the present time. The area occupied by the species today is only a small portion of the formerly occupied range. The lesser prairie chicken has been observed in Colorado only in the sand sagebrush-grassland vegetative type during the inventory (Fig. 13 and 14). Earlier populations also existed within the mixed prairie plant communities which have undergone extreme changes in plant composition.

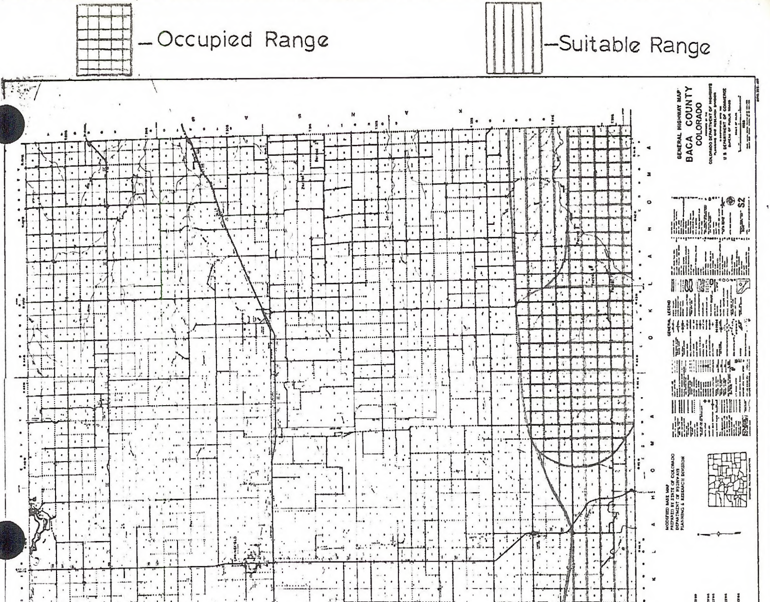

Figure 13. Presently occupied and potentially suitable lesser prairie chicken habitat in Baca County, Colorado.

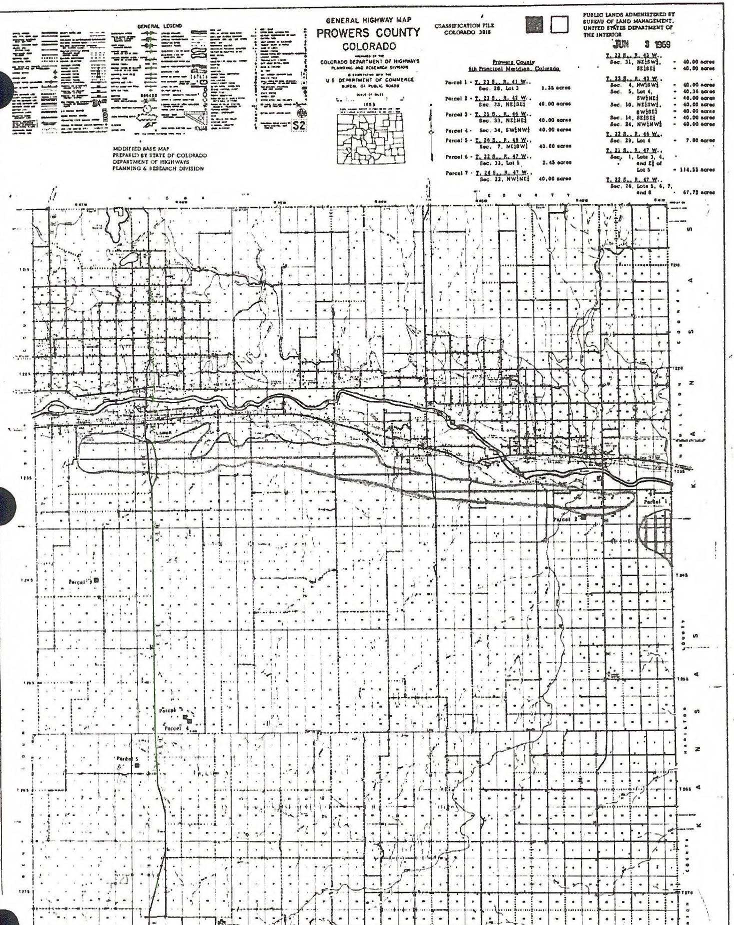

Fig. 14. Presently occupied and potentially suitable lesser prairie chicken habitat in Prowers County, Colorado.

Improved grassland management through rotation of pastures, moderate livestock use, grass reseeding programs, and improved moisture conditions would no doubt help increase the numbers of lesser prairie chickens in the state.

Care must be taken to preserve as much habitat in its natural state as possible. Continual harassment by humans, especially during the booming season, could force the lesser prairie chicken to abandon suitable habitat. The critical part of the year is a six month period from March to August. At this time the lesser prairie chickens are either booming or nesting and should not be harassed. Ninety percent of the existing lesser prairie chicken habitat is located on U.S. Forest Service land and is actively being managed for production of lesser prairie chickens. Currently very little Public Land is located close to lesser prairie chicken booming grounds. There are several tracts of BLM mineral estate which are adjacent to booming grounds. However, no booming grounds are located on NRL or on BLM mineral estates.

In order to prevent abandonment of booming grounds on adjacent lands no disturbance should be allowed during the critical six month period. Limited activity during the rest of the year is acceptable as long as, as little habitat as possible is disturbed.

A total of 780 km^2 of potentially suitable habitat is available to the lesser prairie chicken in Baca County. In existing prime habitat the bird density is six birds/km^2. If this figure is realistic, a total of 4,680 lesser prairie chickens could exist in this potential habitat in Baca County. Prowers County contains 132 km^2 of good

habitat and could easily support 750 additional lesser prairie chickens. These numbers are maximum, and a more feasible goal might be 4,000 and 600 lesser prairie chickens respectively for each area. If the lesser prairie chicken in Colorado were to reach numbers of this magnitude, a hunting season could be opened.

Future studies of this species should include inventorying the land south of the Arkansas River from Lamar east to Holly, Colorado. All suitable farming land has been plowed and the remaining hectares are excellent lesser prairie chicken habitat.

With continued improvement in range management practices and protection by the U.S.F.S., it is hoped the species can continue to increase in numbers and occupy more suitable habitat.

Climatic influences, while undoubtedly affecting lesser prairie chicken numbers, are by no means the only, or even the most important factors preventing increase of the lesser prairie chicken. Trends in land use and agriculture economics are decidedly adverse to the future of the species. The most important of these trends are:

1. the intensive grazing on cattle ranges, resulting in displacement of tallgrasses by shortgrass species.

2. the accelerating program of brush and weed control by aerial application of herbicides.

3. and the continued plowing of native habitat for agricultural purposes.

Lesser prairie chickens constitute a limited wildlife resource, and should be managed as such - not neglected.

Black-tailed Prairie Dog and Black-footed Ferret

Introduction

Prairie dogs are found only in the central region of North America. The black-tailed prairie dog occurs on the Great Plains often in association with the black=footed ferret (Mustela nigripes).

This species was once very abundant on the plains of Colorado and often occurred in large towns (Lechleitner 1969). However, much of the original prairie vegetation has been altered by agriculture and grazing, and man has shot, poisoned and otherwise killed hundreds of thousands of prairie dogs. With the demise of the prairie dog went the black-footed ferret. The black-footed ferret is presently a very rare mammal, dangerously close to the point of extinction and every effort should be made to preserve it for posterity.

Methods

From mid-February to mid-June a field inventory of Baca and Prowers Counties was conducted to locate and record all prairie dog towns and search each one for sign of the endangered black-footed ferret.

Personnel of the U.S. Forest Service and the Colorado Division of Wildlife were consulted as to the location of large active towns. Due to the severity of the bubonic plague in 1976 many of the prairie dogs perished. The location of these towns were mapped and the areas searched. To locate unmapped prairie dog towns it was necessary to drive the county roads searching each likely area with binoculars. The prairie dogs were most often located by two methods: their mounds were seen or the dogs themselves were seen. Prairie dog towns were easily located

because their mounds tended to have less vegetative cover than the surrounding areas. The dogs were diurnal and were seen above ground at all times of the study depending on the weather conditions. During the summer months it was easiest to locate prairie dogs before midmorning while the temperature was still cool. They spent this time feeding and were often seen sitting upright near their burrows.

Each prairie dog town was mapped, size estimated and a short narrative was written about each town (Appendix E). Total numbers were estimated by looking at active burrows. All prairie dog towns were searched for black-footed ferret activity. Black-footed ferret sign was sought only in large prairie dog towns of at least 300 dogs or in areas where several towns were located in close proximity. It normally takes 300 prairie dogs to support a pair of black-footed ferrets for one year (Stromberg 1976). The diagnostic sign of the ferret is a trench dug when a black-footed ferret is digging out a prairie dog burrow. The ferret leaves a trench six to 15 centimeters wide and up to 4 meters long on the surface (Snow 1972). The largest towns were searched as completely as possible looking for this activity.

Results

All of the prairie dog towns found during this inventory were associated with the relatively undisturbed shortgrass and mixed grass prairie. Plant species common to prairie dog habitat include blue grama, buffalo grass, rabbitbrush, yucca, pricklypear cactus, red threeawn, foxtail barley and western wheatgrass. The majority of these grasses and shrubs are low growing and kept well clipped by the prairie dogs.

A total of 30 prairie dog towns were found on the 1,262,334 hectares in Baca and Prowers Counties (Fig. 15 and 16). Of the 30 towns, 90% were located on private land with the remaining 10% on U.S. Forest Service land. The 30 prairie dog towns covered an area 1,191 hectares in size. Individual towns ranged in size from 0.8 hectare to 290 hectares with the average size being 39.7 hectares.

Estimated numbers of prairie dogs per town ranged from a low of 20 dogs to a high of 2000 with the average per town at 165 dogs. Prairie dog densities reached a high of 48 dogs/hectare, a low of 0.6/hectare with the average being 8.4 dogs/hectare. With an average of 8.4 prairie dogs/ hectare it would take 37-42 hectares to support a pair of black-footed ferrets. No sign or indication of black-footed activity was found, and it was concluded that no animals presently exist in Baca or Prowers Counties.

Discussion

The biggest threat to the black-tailed prairie dog and the black-footed ferret at this time is the continual breaking up of habitat for agricultural use and poisoning of prairie dogs by man. Much of the area in Baca and Prowers Counties is cultivated and unsuitable for prairie dog habitation. Existing prairie dog towns are located either in areas of no value to farming or rangelands too far from water for agricultural use.

Several large prairie dog towns are located on public land administered by the U.S. Forest Service west of Campo, Colorado. All of the other occupied towns are on private land with only two being located on

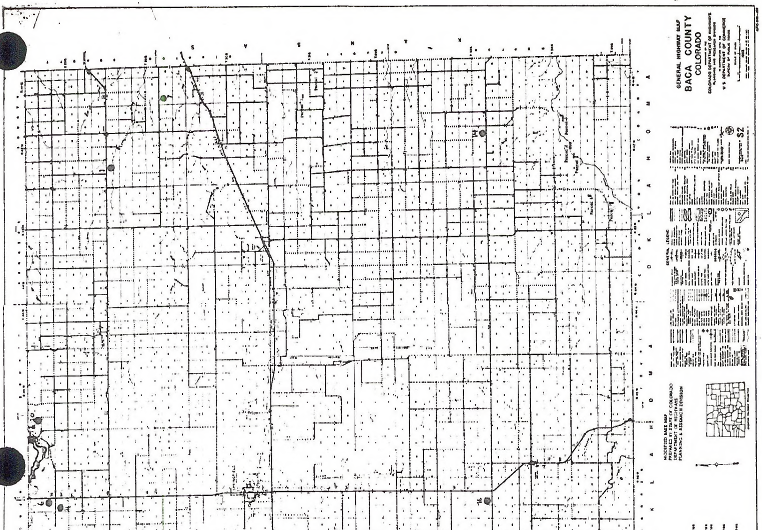

Fig. 15. Existing Prairie dog towns in Baca County, Colorado.

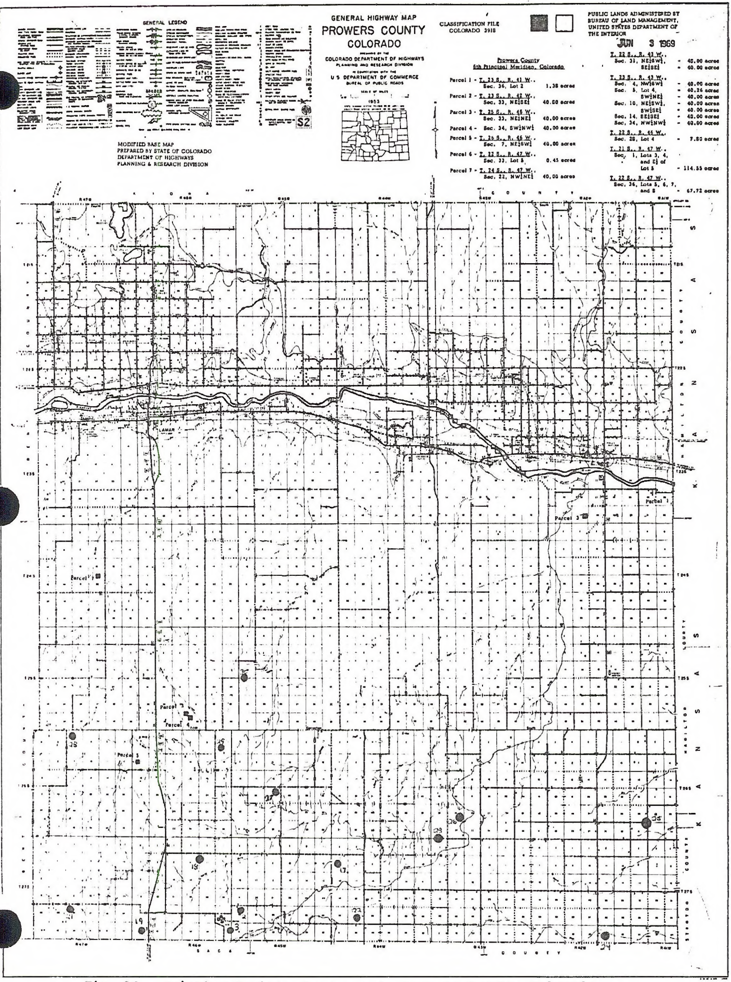

Fig. 16. Existing Prairie dog towns in Prowers County, Colorado

land on which the BLM has subsurface mineral rights.

An effort must be made to convince farmers and ranchers to stop poisoning prairie dogs. Based on the data of occupied range (1208 hectares) compared to total area of Baca and Prowers Counties (1,291,666 hectares) it was evident prairie dogs in this area are uncommon. As a result it is very unlikely that any black-footed ferrets exist in this area at this time.

The black-tailed prairie dog is nowhere abundant, yet it is not rare. It does not seem in danger of extinction, as is the black-footed ferret, at the present time. As agricultural use becomes more intensive, and irrigation more extensive, these species will certainly have to give way to the "progress"of man.

Burrowing Owl

Introduction

The burrowing owl is a small, readily identified bird of the western deserts, prairies and plains. The U. S. Department of the Interior, in 1973, listed the burrowing owl as a "status-undetermined" species (U.S. Dept. of the Interior 1973). Although estimates of burrowing owl numbers remain largely unavailable, the species is believed to be declining throughout most of its range due to loss of preferred nesting habitat through land development and extensive rodent control activities (Zarn 1974).

Methods

Since burrowing owls are commonly associated with prairie dogs, many were observed while searching prairie dog towns for sign of black-footed ferret.

County roads were driven and likely looking areas were searched closely. The main effort was centered around old and abandoned prairie dog towns. In these areas the owls had many old burrows which provided habitat. The burrow dominated much of the ecology of the burrowing owl, functioning in nesting, shelter, protection from enemies, food supply and social interaction (Bent 1938). As a result, burrowing owls exhibited a high degree of association with colonial burrowing mammals, particularly prairie dogs. In areas of extensive farming, roadsides and small isolated pastures were searched for the owl.

Results

While burrowing owls live in a wide range of communities, openness, short vegetation, and burrow availability form essential components of optimum habitat in all situations.

Burrowing owls were migratory and the first owls observed were seen on 24 March 1977. For about a week most burrowing owls seen were still grouped in small flocks of three to six. As the weather warmed, the owls began spreading out and singles and pairs were commonly seen.

Of 13 nesting pairs only 3 pair were observed nesting in burrows other than prairie dog burrows. The largest concentrations of owls were seen in abandoned prairie dog towns. Occassionally four to five pairs had taken refuge in these old towns. In active prairie dog towns one pair was the usual amount.

Discussion

Restrictions on prairie dog control activities may protect burrowing owls. In order to preserve the owl, roads and other disturbances such as oil and gas drill rigs, on Public Lands and BLM mineral estate in Colorado should be located away from prairie dog towns. When a decision on a lease must be made a survey of the area in question during the nesting season to determine the presence of the burrowing owl should be done.

Burrow availability operates as the chief limiting factor in controlling burrowing owl numbers. Burrowing owls seldom utilize areas devoid of burrowing mammal colonies. Furthermore, they depend primarily on active burrowing mammal colonies for nest burrow sites.

In future years, the development of oil and gas resources may further

reduce the numbers of this species. To preserve and maintain viable populations of burrowing owls on surface-mined public lands, it will first be necessary to reestablish colonies of burrowing mammals in these areas. The future of the burrowing owl is dependent on the survival and perpetuation of the prairie dog and other burrowing mammals.

Golden Eagle

The golden eagle is primarily a bird of mountainous country and in the United States is found mainly in the west. Recent estimates suggest a population of 35,000 golden eagles in the contiguous 48 states, with a possible overall population of 50,000 to 100,000 for North America (Snow 1973).

From February to June while this inventory was done, approximately 17 golden eagles were seen in Baca and Prowers Counties. The highest concentration of eagles was seen in the southwest corner of Baca County in the Cottonwood Creek, Carrizo Canyon area. The isolated pinyon-juniper canyons in this area provide the eagle with perfect habitat. This entire canyon area should be more thoroughly searched for the presence of nests. Several other eagles were seen scattered throughout Baca County. Only a few birds were observed in Prowers County where preferred habitat is limited.

Only one golden eagle nest was discovered (Fig. 17). The nest was discovered on 29 April 1977. A three week old eaglet was in the nest and it did fledge. The nest was near Two Buttes reservoir and was located in an area of continuous human harassment but it appeared the birds had adjusted to the disturbances (Appendix F). However, human disturbance has accounted for 85% of the nest desertions observed on the front range of the Rocky Mountains in Colorado and New Mexico (Snow 1973).

Because of the uniqueness of the Carrizo, Cottonwood areas in southwestern Baca County, and the large amounts of land for which the BLM has subsurface mineral rights, this is a critical area. Before any oil and gas leases are approved a raptor biologist should inventory the area.

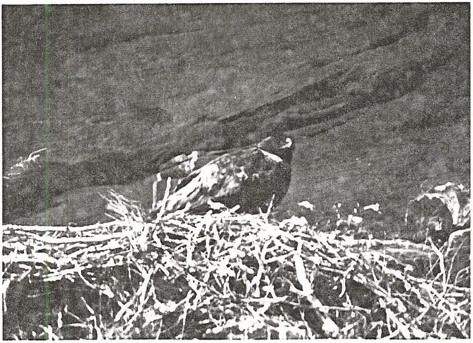

Fig. 17. Golden eagle nest near Two Buttes reservoir in Baca County, Colorado.

Loss of hunting habitat appears to be the most serious threat to the continued existence of golden eagles. When the rodent population decreases as a result of man's activities the golden eagle will slowly be forced out.

Although human-inflicted mortality is common in some areas, the population is reproductively sound and chemical contamination is not presently a problem. However, increasing demands for use of our public lands may have detrimental effects on golden eagles and their habitat. Wise use and management of our lands should avert that problem.

Mississippi Kite

The Mississippi kite is a summer resident in the United States, arriving from the South in April (Bent 1938). It is a rare visitor in Colorado and has been reported nesting along the Cimarron River in extreme southeastern Baca County.

During the four months of this inventory from March through June, the Cimarron River was searched occasionally for the species. No birds were seen in the area. In early June a pair of Mississippi kites was reported within Lamar city limits. After a search, several birds were observed flying above Willow Creek Park in southeast Lamar.

Five nests were located in cottonwood and elm trees within the park. They were all located among the highest branches and concealed well with green vegetation placed there by the birds. On 14 June 1977 an early evening survey accounted for a total of 14 Mississippi kites among the trees in the park. It was assumed that some nests were not found and additional kites might be present.

It appeared the Mississippi kite is very well established in this Lamar park. Apparently the birds were unbothered by humans as they nested in areas heavily populated by people. A lack of tall, large, numerous cottonwoods and elms elsewhere in Baca and Prowers Counties probably accounts for the birds being in the park where this habitat was available.

Ring-necked Pheasant

The ring-necked pheasant is an important game bird common in open woods and on farmland in brush, hedgerows and cornfields. It is common throughout Baca and Prowers Counties but only a few areas have huntable populations of these birds.

In Baca County the highest population of pheasants are found from the Baca-Prowers county line on highway 287 south to Campo, east to the Kansas state line and north back to the county line (Fig. 18). In Prowers County all the irrigated land along the river supports pheasants (Fig. 19). Much of the habitat within these boundaries is marginal but secluded areas support large numbers of birds. Flocks of as many as 27 birds were flushed northwest of the town of Two Buttes during the study.

In Baca County the declining pheasant population is due to clean farming, which includes huge fields, no fencerows and burning of ditches. Very little nesting habitat and winter cover is available to the birds. In Prowers County, along the river, the birds nesting efforts are thwarted by the early cutting of alfalfa. Very few broods are brought off and successfully reared.

At present, oil and gas exploration activity in pheasant habitat would not harm the birds drastically. Critical pheasant habitat is located on edges of fields, shelter belts and ditches. As long as this habitat is not destroyed, the birds will continue to survive.

Before pheasant populations will increase, farming methods must be altered. Field size, burning and early alfalfa cutting must be

reduced or stopped. Pheasants need more critical winter cover and spring nesting habitat.

Quail (Scaled and Bobwhite)

Two species of quail occur in Baca and Prowers Counties. The scaled quail is a common bird of dry semi-desert country (Fig. 20).

It is most common in Baca County east of Campo and south to Oklahoma (Fig. 18). Highest populations of this bird were found in an area of mixed sand-sagebrush desert and cultivated croplands. It is typically found around brushy draws and low growing trees where it seeks shelter from predators. Good populations also occurred in the pure sand-sagebrush communities. In these dryer areas they were often seen near water. Populations of scaled quail fluctuate widely from year to year.

The bobwhite quail extends its western range into eastern Colorado. It is not nearly as common as the scaled quail and prefers habitat similar to the pheasant. On a few occasions this bird was seen in Baca County but the bobwhite quail was much more numerous along the Arkansas River in Prowers County (Fig. 19). It preferred brushy areas near grain fields.

Because the quail is easily adaptable to human interference, oil and gas exploration activity would have little effect on this bird.

Drill sites should be placed to avoid low growing woody shrubs and weedy annuals particularly around old homesteads where both of these species of quail tend to congregate.

Fig. 20. Scaled Quail in Baca County, Colorado

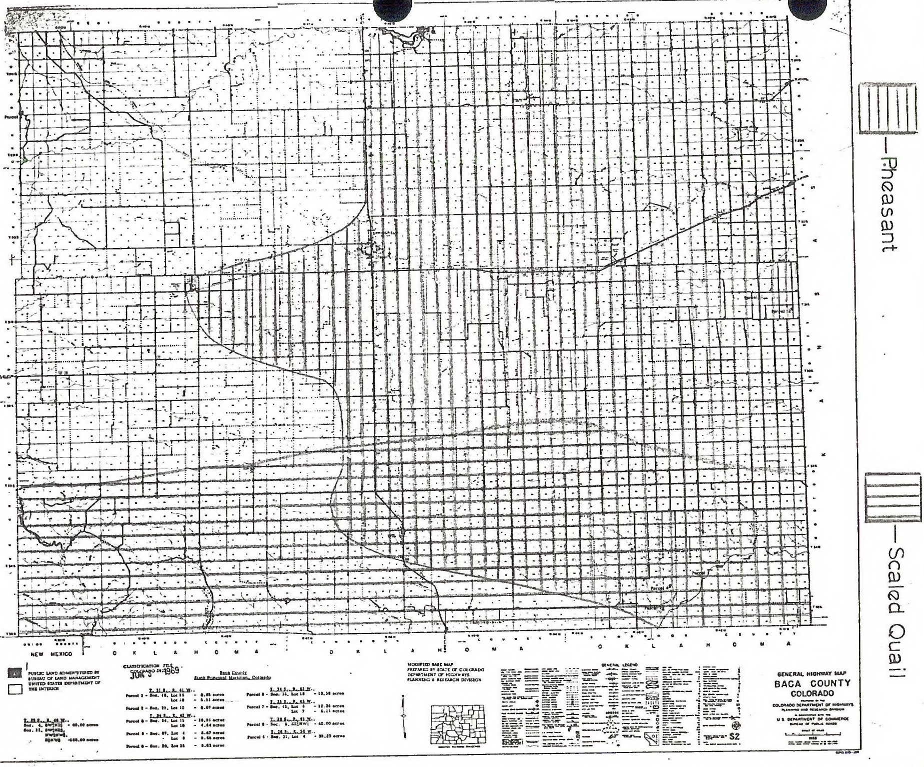

Fig. 18. Present ring-necked pheasant and scaled quail range in Baca County, Colo.

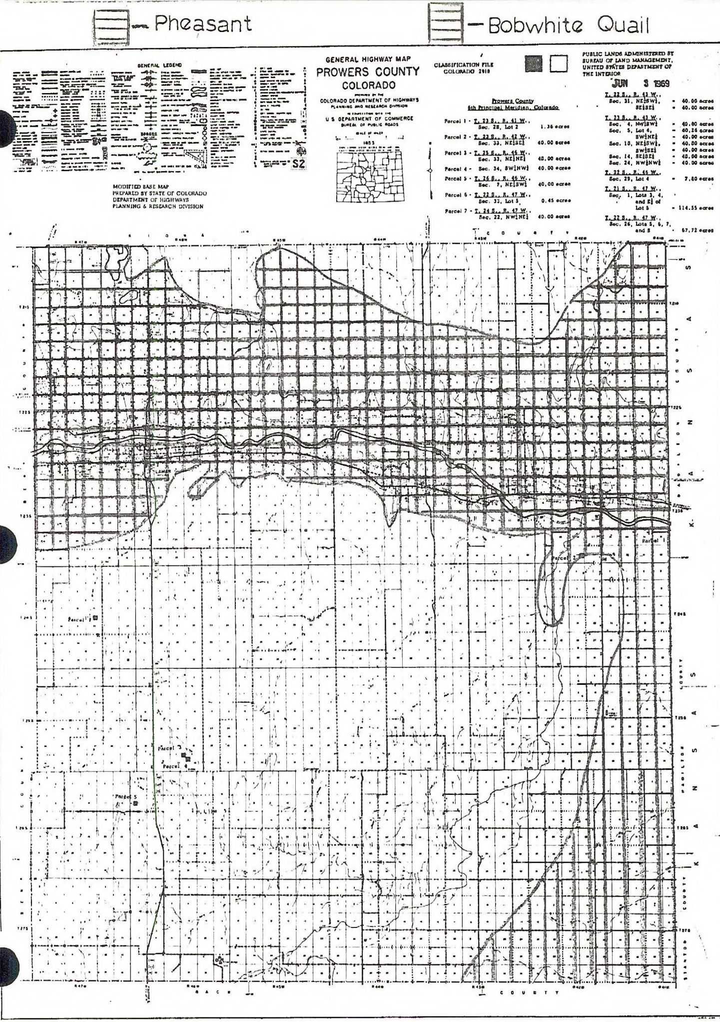

Figure 19. Present ring-necked pheasant and bobwhite quail range in Prowers County Colorado.

Long-billed Curlew

The long-billed curlew is one of the most interesting and notable of the shorebirds (Fig. 21). In its former abundance this species was very common on the western plains. The native shortgrass prairies are rapidly disappearing and this bird cannot stand the encroachments of agriculture.

Fig. 21. Long-billed Curlew on the shortgrass prairie.

The long-billed curlew is likely to nest almost anywhere on the prairie, though it shows a preference for damp, grassy hollows in the prairie, or long slopes near the lakes or streams (Bent 1938).

During the inventory many long-billed curlews were seen both in Baca and Prowers Counties. The first curlew was seen on 12 April 1977 on the Comanche National Grassland west of Pritchett. The Comanche

National Grassland provides excellent habitat for the species. The majority of long-billed curlews were seen in western Baca County and southern Prowers County.

Oil and gas exploration should be confined to small isolated areas during the fall and winter to avoid disturbing nesting curlews. The long-billed curlews survival depends on the maintenance of large, open ranges of grazing lands for cattle where it continues to breed.

<u>Mountain Plover</u>

The mountain plover frequents elevated ground and is not a bird of the mountains but of the dry plains. While most plovers frequent the vicinity of water, this species is not found in aquatic habitats.

The mountain plover is a rare species in Baca and Prowers Counties and only one bird was observed during the inventory. The plover prefers open, rolling prairie and is devoted to cattle range. Its habitat is frequently several miles from surface water and is covered with short-cropped buffalo or gramma grass (Bent 1938).

The most logical explanation for the rarity of this species is the continual loss of habitat. More and more land is being turned over and put to farmland use. As for the effect of oil and gas leases on the mountain plover, it would be minimal. Only small areas should be disturbed and any drilling or exploration should be conducted during the fall and winter when the mountain plovers are not on the nesting grounds.

A more detailed inventory should be conducted for this species and an attempt should be made to identify and map known nesting areas. The mountain plover is slowly becoming a rare species.

Big Game

Two species of big game occurred in Baca and Prowers Counties. They were the mule deer (Fig. 22) and pronghorn antelope.

Antelope occurred scattered over both counties except where agriculture infringes on the rangeland (Fig. 23 and 24). There were not large herds of pronghorns anywhere. Overgrazing of preferred antelope forage by cattle may be limiting antelope. In addition, there were few large expanses of pure rangeland uncut by roads. This area will probably never be occupied by numerous herds. An estimate of the present antelope population in both counties would put the number at 150 animals.

Fig. 22. Mule deer near Two Buttes Reservoir in Baca County, Colo.

Mule deer habitat in these plains counties was extremely limited. Selected stream and drainage bottomlands supported a few deer (Fig 23 and 24).

In Baca County deer were found in the area of Carrizo and Cottonwood canyons, Two Buttes Creek drainage, Sand Arroyo near Burchfield Lake, the Cimarron River valley, Horse Creek drainage and Plum Creek drainage. In Prowers County deer were occasionally seen in Two Buttes Creek and Clay Creek drainages. Mule deer were quite common all along the Arkansas River and could be seen feeding in the fields bordering the river. Good populations of mule deer were found in the country north of the Arkansas River which was uncovered by this inventory.

Oil and gas exploration activities would not directly affect the two species as long as no drilling is done in antelope lambing areas during spring or in dense brushy patches frequented by mule deer.

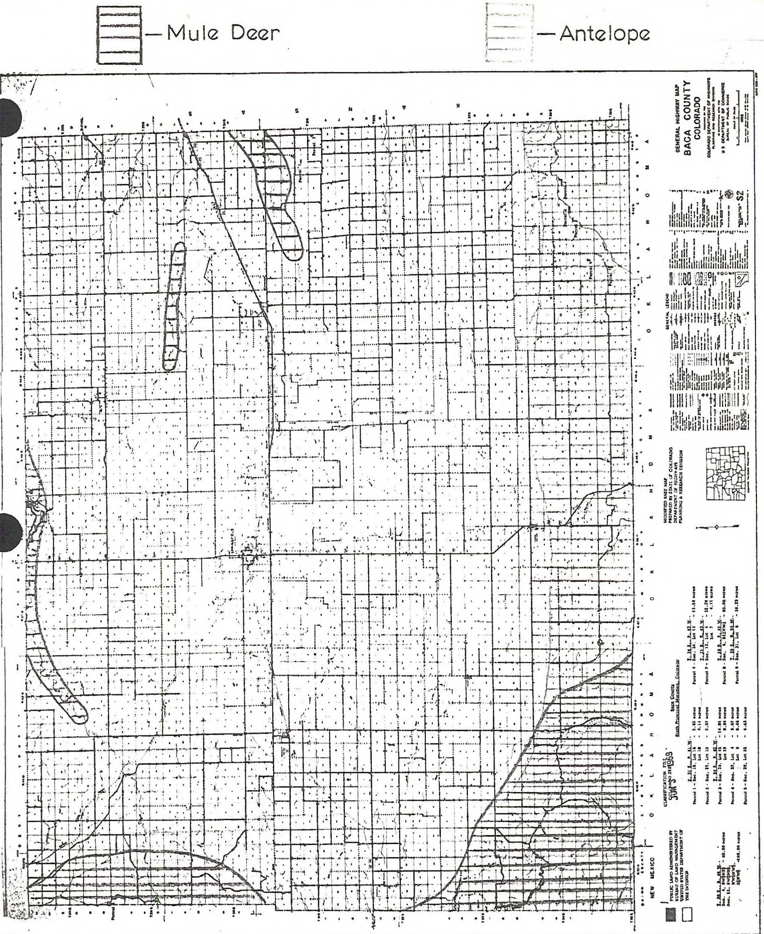

Fig. 23. Pronghorn antelope and mule deer distribution in Baca County, Colo.

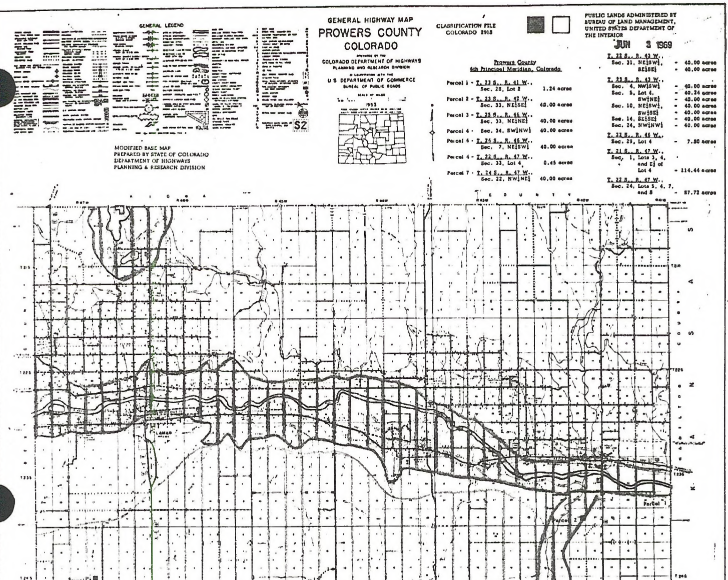

Fig. 24. Pronghorn antelope and mule deer distribution in Prowers County, Colorado

Waterfowl

The family Anatidae includes all the ducks, geese and swans. Of this family 17 species were observed. This included two species of geese, eight species of dabbling ducks and seven species of diving ducks.

From the time the inventory began in February till mid-March, approximately 30,000 Canada geese and 300 lesser snow geese wintered in Baca County. About 80% of these numbers were located at Turks Pond which is located 3.7 kilometers south of the town of Two Buttes, Colorado. The remaining 20% were resting on Two Buttes Reservoir which is about 3.1 kilometers north and five kilometers west of the town. During the fall hunting season geese range in a circle with a radius of approximately 6.2 kilometers from Turks Pond. Because this area attracted large concentrations of geese, it was heavily hunted and has been called the "Goose Hunting Capital" of Colorado. As a result of the hunting pressure the geese flew great distances to feed. After the season they rarely flew more than 3.1 kilometers for grain unless adequate feed wasn't located closer (Bellrose 1976). The geese normally migrate north about the second week in March. From this time until they return in the fall there were probably no more than ten pair in Baca County.

There are five bodies of water in Baca County which were continually occupied by ducks. These included Two Buttes Reservoir, Turks Pond, Burchfield Lake, Flying Bird Trap Club pond and two small ponds on the Cimarron River (Fig 25). Burchfield Lake is located 6.8 kilometers straight east of Walsh, Colorado and the trap club was 2.5 kilometers west of Springfield, Colorado. Burchfield Lake and the Cimarron ponds appeared to be

intermittent. Because of the heavy rains in the spring of 1977 both these catchments were full of water.

Numerous stock ponds and springs support limited numbers of ducks. Because Baca County is normally dry, very few ducks normally breed in the area. As with many lakes and ponds in the mid-western states, the importance of the water is to provide temporary resting and wintering areas for waterfowl on fall and spring migrations.

Prowers County was inventoried up to the Arkansas River and did not include two reservoirs in the northwestern part of the county (Fig.26). The Arkansas River area is an important source of water for ducks and various shorebirds. Large numbers of ducks winter on the Arkansas River and provide excellent hunting for locals.

Oil and gas exploration will not directly effect waterfowl in Baca and Prowers Counties as long as existing water sources are not effected. Because waterfowl use of these areas is locally concentrated and seasonal, they should not be affected if the time of activity is restricted from April to September.

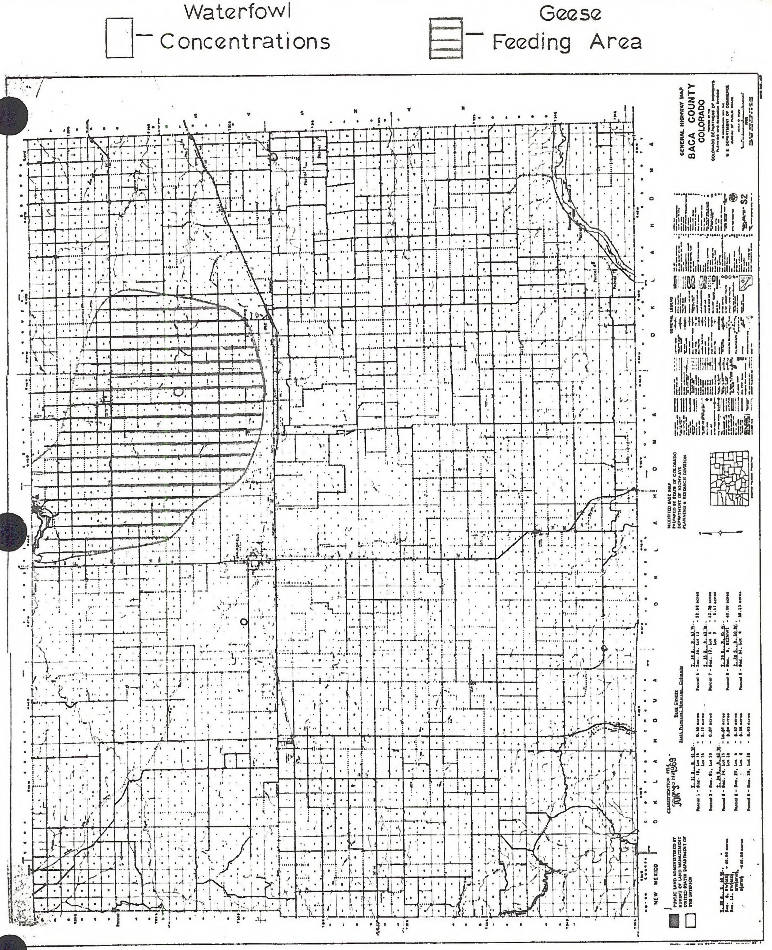

Fig. 25. Waterfowl habitat in Baca County, Colorado

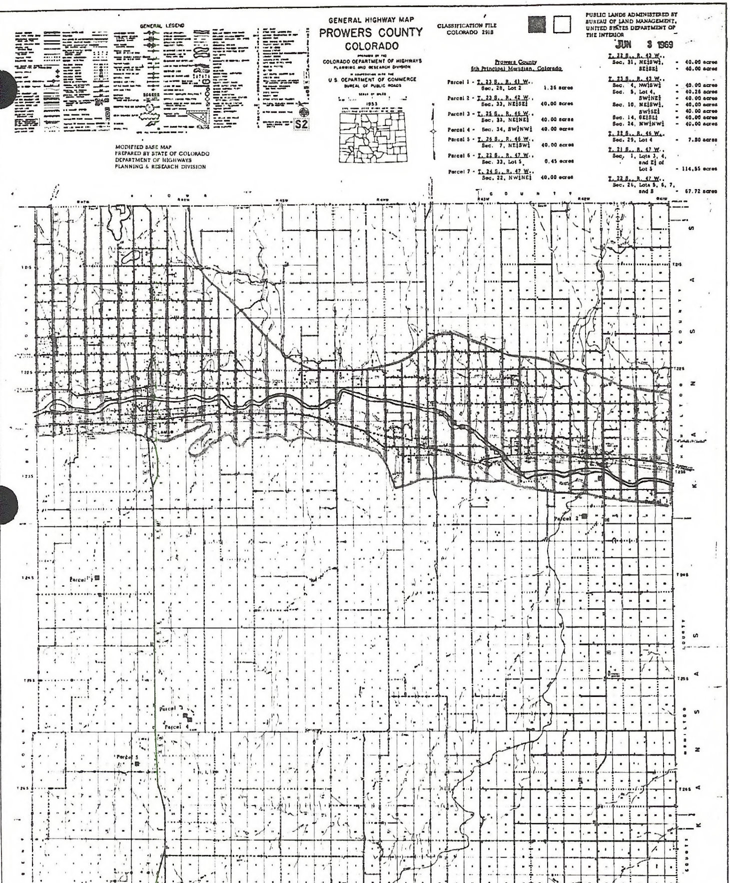

Fig. 26. Waterfowl habitat in Prowers County, Colo.

Raptors

From February till June while this inventory was being conducted in Baca and Prowers Counties, eight species of raptors and three species of owl were observed (Table 3).

The most numerous raptor on the plains was the marsh hawk (*Circus cyaneus*) which wintered in this area (Bent 1937). During February and March, marsh hawks were seen every day with a high count of 20 birds on 24 February 1977. As spring progressed the marsh hawks migrated north until in April and May, one or two sightings each week was common.

As the marsh hawks moved out, the Swainson's hawk (*Buteo swainsoni*) moved in, with the first bird seen on 15 March 1977. In April and May this was the most common hawk in the area. Swainson's hawks nest in Baca and Prowers Counties and two nests were found (Appendix F).

During the last two weeks of March the rough-legged hawk (*Buteo lagopus*) was making its northward migration (Zarn 1975). During this time five to six birds were seen each day. It was commonly seen in groups of three to five.

The ferruginous hawk (*Buteo regalis*) was occasionally observed on the eastern plains. In Colorado this bird is a yearlong resident and no migration patterns were noted (Snow 1974). This hawk was not common and only about ten birds were seen during the inventory.

Preferred habitat for the red-tailed hawk (*Buteo jamaicensis*) is not available in southeastern Colorado. As a result, only one pair was observed in Baca County in mid-April. They were seen in rolling pinyon-juniper hills common to the species. Due to the behavior of the species

Table 3. Status of Raptors in Baca and Prowers Counties, Colorado

Species	Winter	Summer	Breeding	Yearlong	Abundance
Marsh Hawk	Yes	Yes	Yes	Yes	Abundant
Swainson's Hawk	No	Yes	Yes	No	Common
Rough-legged Hawk	Yes	No	No	No	Unusual
Ferruginous Hawk	Yes	Yes	Yes	Yes	Unusual
Red-tailed Hawk	Yes	Yes	Yes	Yes	Unusual
Kestrel	Yes	Yes	Yes	Yes	Common
Prairie Falcon	Yes	Yes	Yes	Yes	Unusual
Pigeon Hawk	Yes	Yes	Yes	Yes	Unusual
Burrowing Owl	No	Yes	Yes	No	Common
Long-eared Owl	Yes	Yes	Yes	Yes	Unusual
Great Horned Owl	Yes	Yes	Yes	Yes	Common

and the time of year, a nest was probably in the area but was not found.

Three species of the family Falconidae were present on the eastern plains. The kestrel (Falco sparverius) was most common with the majority being seen migrating north in April and May. By mid-June, few kestrels were in the area. Occasionally a prairie falcon (Falco mexicanus) and pigeon hawk (Falco columbarius) were observed. Prime nesting habitat for the prairie falcon is located in southwestern Baca County.

Of the owl family, Strigidae, three species were noted in the inventory. The burrowing owl was the most common and a special report was written on the species. One sighting of a long-eared owl (Asio otus) was made near Pritchett, Colorado (Fig. 27). It is not known whether this

Fig. 27. Long-eared owl in defense posture.

owl was migrating or nesting in the area.

Several great horned owls (Bubo virginianus) were observed during

the inventory. They were most often located near stands of cottonwood trees near heavy brushy areas. One nest was found in the canyon below Two Buttes reservoir. It was located in a large crack in the cliff and two young fledged (Appendix F).

For most species of raptors, the Baca and Prowers Counties area is only important to these species at certain times of the year, mainly the nesting season. Because bird species are mobile they would not be directly affected by oil and gas exploration. However, care must be taken not to destroy critical nesting habitat.

Predators

Predators in this inventory include coyotes, bobcats (Lynx rufus), badgers (Taxidea taxus), and skunks (Mephitis mephitis). The area appears to be suitable habitat for mountain lions (Felis concolor) but no reports or sightings are documented.

These species occurred throughout Baca and Prowers Counties. Availability of prey species determine the population of predators (Lechleitner 1969). Certain areas in the inventory contain high prey concentrations. The highest numbers of coyotes were found in southern Baca County and along the Arkansas River in Prowers County. Both these areas provide good cover and abundant food resources.

No mountain lions or bobcats were observed but it is suspected they occur in the canyon country in southwestern Baca County. The habitat in the area is typical of the type associated with the wild cats.

The biggest threat to predators is the loss of prey as a result of man's disturbances. Southwestern Baca County contains vast amounts of BLM mineral estate and care must be taken to preserve the habitat. If prey species are eliminated by oil and gas exploration activities, the predators could disappear also.

Shorebirds

During the inventory in Baca and Prowers Counties more than 20 species of shorebirds were observed. Some of the more common species were the American coot, great blue heron, American avocet, killdeer, sanderling, least sandpiper and ring-billed gull. A complete list of all shorebirds is found in Appendix A.

This area of the state is not known for supporting many water birds because of the dryness of the area. However, as with waterfowl, these species were found only in certain areas.

The four most common areas to observe shorebirds were Two Buttes Reservoir, Flying Bird Trap Club near Springfield, Burchfield Lake and along the Cimarron River. Occasional farm ponds and small intermittent streams also supported small numbers of shorebirds.

Few shorebirds actually nest in the Springfield-Lamar area but are commonly seen migrating north in the spring. During the study evidence of nesting was found for the following species: great blue heron, American coot and killdeer. It is known that long-billed curlews, mountain plovers and upland plovers also nest in the two counties. The Arkansas River in Prowers County is used by several species of water birds during the appropriate time of the year.

Because of the limited amounts of water in southeastern Colorado, this area is not important as a shorebird area. Most bodies of water were used temporarily by migrating birds and as long as they are preserved, there is no danger of losing the shorebird populations.

Passerines

As in most cases the passerines make up the bulk of the population of birds in any area. In Baca and Prowers Counties many different habitat types provided homes for large numbers of perching birds. The birds were found in sand-sagebrush, shortgrass-prairie, riparian, urban and agricultural habitats.

More than 40 species were observed in the two counties. Most common species would include the flicker, mourning dove, western kingbird, horned lark, black-billed magpie, robin, starling, house sparrow, western meadowlark, and lark bunting. A complete bird list with scientific names is included in Appendix A.

The following areas in Baca County had good concentrations and variety of passerines: Springfield, Walsh, Vilas, Pritchett, Two Buttes Reservoir and Creek, Cimarron River, Burchfield Lake, Flying Bird Trap Club pond, Carrizo and Cottonwood Canyons and Campo (Fig. 28). In Prowers County the entire area from the Arkansas River north to the county line, Two Buttes Creek and Clay Creek held birds (Fig. 29). The similarities of all these areas was that they were located near water or heavily wooded bottomlands. For many passerines limiting factors included water and shade from the summer heat.

Of all the wildlife, the passerines would probably be least affected by oil and gas exploration. An effort should be made to preserve trees on the plains. Passerines were highly mobile and easilly adaptable to human interference, but due to the limited habitat, disturbances should be held to a minimum. Exploration activities should take place after 1 August and as few trees as possible removed.

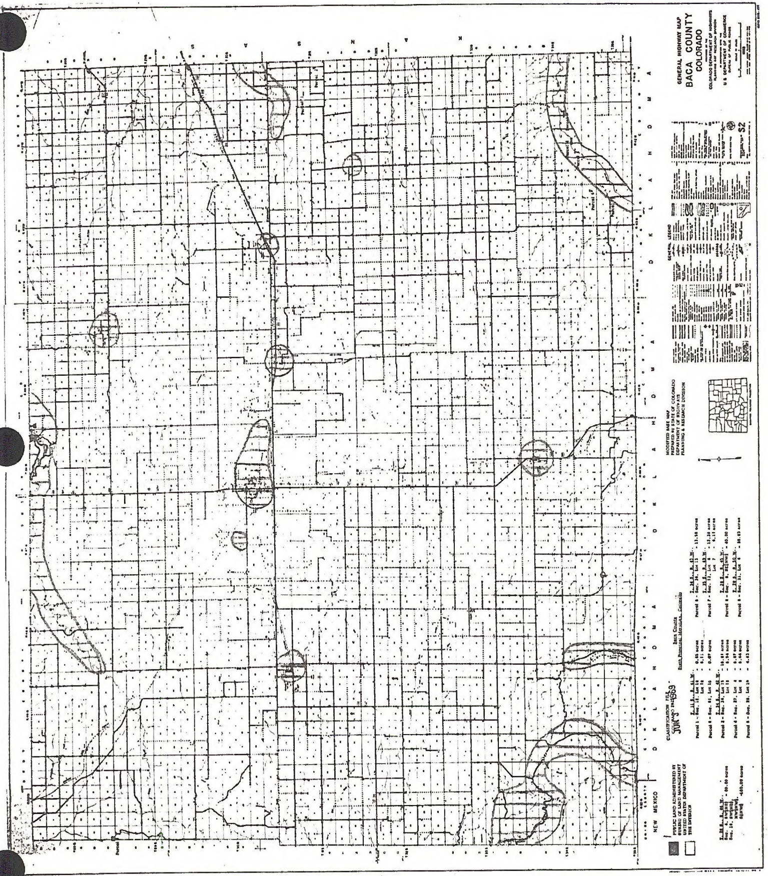

Fig. 28. Passerine habitat in Baca County, Colorado

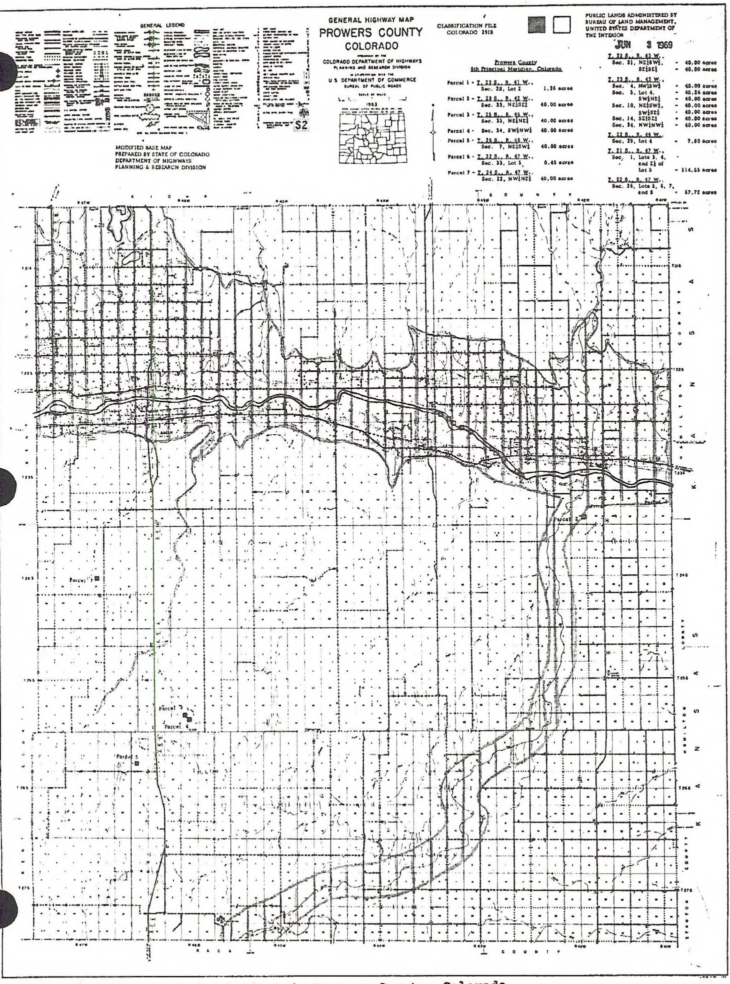

Fig. 29. Passerine habitat in Prowers County, Colorado.

Reptiles, Amphibians and Fish

The semi-desert region of Baca and Prowers Counties provides good habitat for many different reptiles, amphibians and fish. The inventory was not designed to include these cold-blooded animals and as a result what follows is strictly random observation of the animals as the inventory was conducted.

Reptiles seen included two species of lizard, the Texas horned lizard (Phrynosoma cornutum), and the lesser earless lizard (Holbrookia maculata). The western box turtle (Terrapene ornata) was very common in the area. Snakes include the gopher snake (Pituophis melanoleuvus sayo), the plains garter snake (Thamnophis radix), prairie rattlesnake (Crotalus viridis viridis) and the common water snake (Natrix sipedon). Two amphibians, the leopard frog (Rana pipiens) and the western toad (Bufo boreas) were commonly seen near water.

Fisheries habitat is rare in Baca and Prowers Counties but two areas do support good fish populations. These are the Arkansas River and Two Buttes reservoir. Listed in Table 4 are the fish species reported in these waters. Fluctuating water levels in both these bodies of water, because of irrigation, make them difficult fisheries to manage.

Oil and gas exploration activities would have little effect on these waters as long as overflow ponds near drill rigs are monitered to prevent spillage that might pollute the few fisheries.

TABLE 4. Fish species present in the Arkansas River and Two Buttes Reservoir in southeastern Colorado

Common Name	Scientific Name
Rainbow Trout	(*Salmo gairdneri*)
Northern Pike	(*Esox lucius*)
Walleye Pike	(*Stizostedion vitreum*)
White Crappie	(*Pomoxis annularis*)
Largemouth Bass	(*Micropterus salmoides*)
White Bass	(*Morone chrysops*)
Yellow Perch	(*Perca flavescens*)
Bluegill	(*Lepomis macrochirus*)
Green Sunfish	(*Lepomis cyanellus*)
Channel Catfish	(*Ictalurus punctatus*)
Black Bullhead Catfish	(*Ictalurus melas*)
Carp	(*Cyprinus carpio*)
White Sucker	(*Castostomus commersoni*)
Plains Sand Shiner	(*Notropis deliciosus missuriensis*)
Plains Red Shiner	(*Notropis lutrensis*)
Plains Killifish	(*Fundulus kansae*)
Fathead Minnow	(*Pimephalus promelas*)
Suckermouth Minnow	(*Phenacobius mirabilis*)
Arkansas River Speckled Chub	(*Hybopsis aestivolis tetranemis*)
Plains Stoneroller	(*Campostoma anomalum plumbeum*)

Recommendations on Retention or Disposal of BLM Lands in Baca and Prowers Counties, Colorado

While all lands in Baca and Prowers Counties have at least marginal wildlife values, BLM funding for wildlife management in these areas is of low priority. Three alternatives are possible for disposal of parcels in the area:

1. transfer to the Colorado Division of Wildlife for management
2. trade parcels for tracts where BLM lands are better blocked and more manageable
3. put up for bid and sold (Fig. 30 and 31).

Baca County

Parcel 1 - T. 31 S., R. 41 W.
Sec. 18, Lot 16 and 18. Total area - 6.76 acres (2.8 hectares).

Parcel 2 - T. 31 S., R. 41 W.
Sec. 21, Lot 10. Total area - .07 acres (.02 hectares).

Parcels 1 and 2 are located east and south of the town of Walsh, Colorado. Both areas are cultivated with other lands in the area and could be considered in agriculture trespass. Because of the small sizes, these lands should either be sold or trespass proceedings implemented. Small patches of pheasant and quail habitat on these parcels could be improved by stopping plowing and letting weeds grow.

Parcel 3 - T. 34 S., R. 42 W.
Sec. 24, Lot 15 and 18. Total area - 23.75 acres (9.89 hectares).

Parcel 4 - T. 34 S., R. 42 W.
Sec. 27, Lot 4 and 6. Total area - 17.33 acres (7.22 hectares).

Parcel 5 - T. 34 S., R. 42 W.,
Sec. 28, Lot 15. Total area - 4.63 acres (1.9 hectares).

Parcels 3, 4 and 5 total 45.71 acres (19 hectares) of good riparian habitat along the Cimarron River. The Cimarron River area provides

habitat for many species of birds. Several species are found only in this small area of Colorado making this a favorite spot for birdwatchers from all over the region. Recommendations are that these lands be retained and an effort be made to secure surrounding areas. With an access road and parking lot this area could become a valuable birdwatching site.

Parcel 6 - T. 34S., R. 34 W.
Sec. 36, Lot 13. Total area - 13.58 acres (5.65 hectares).

Parcel 7 - T. 35 S., R. 43 W.
Sec 12, Lots 6 and 7. Total area - 18.39 acres (7.66 hectares).

Parcels 6 and 7 are located away from the Cimarron River in sand-sagebrush heavily grazed by cattle. Both have relatively little wildlife value and should be disposed of.

Parcel 8 - T. 28 S., R. 45 W.
Sec. 6, SE¼NW¼. Total area - 40 acres (16.66 hectares).

This tract is located near Two Buttes Reservoir and is currently being considered as an area to be transferred to the Division of Wildlife as a management area.

Parcel 9 - T. 28 S., R. 50 W.
Sec. 31, Lot 4. Total area - 38.23 acres (15.92 hectares).

This tract is located in pinyon-juniper in western Baca County. Access is limited and the land has no real value except for cattle grazing. Recommendations are that it be disposed of.

Parcel 10 - T. 28 S., R. 46 W.
Sec. 4, SW¼NE¼. Total area - 40 acres (16.16 hectares).
Sec. 11, SW¼NE¼, NW¼NW¼, and S½NW¼. Total area - 160 acres (66.66 hectares).

These two tracts are located on Two Buttes Reservoir and are two of the several BLM parcels on the eastern plains being considered for transfer

to the Division of Wildlife for management.

Prowers County

Parcel 1 - T. 23 S., R. 41 W.
Sec. 28, Lot 2. Total area 1.36 acres (.56 hectares).

Parcel 2 - T. 23 S., R. 42 W.
Sec. 33, NE¼SE¼. Total area - 40 acres (16.6 hectares).

Located south of Holly, Colorado these tracts are in rangeland heavily grazed by cattle. These parcels have no readily evident value to wildlife and it is recommended they be disposed of.

Parcel 3 - T. 25 S., R. 46 W.
Sec. 23, NE¼NE¼. Total area - 40 acres (16.6 hectares).

Parcel 4 - T. 25 S., R. 46 W.
Sec. 34, SW¼NW¼. Total area - 40 acres (16.6 hectares).

Parcel 5 - T. 26 S., R. 46 W.,
Sec. 7, NE¼SW¼. Total area - 40 acres (16.6 hectares).

Tracts 3, 4 and 5 are located in shortgrass prairie near U.S. 287 south of Lamar. All three could be considered livestock trespasses. Disposal of these lands is recommended.

Parcel 6 - T. 22 S., R. 47 W.
Sec. 33, Lot 5, Total area - .45 acres (.18 hectares).

T. 22 S., R. 43 W.
Sec. 31, NE¼SW¼. Total area - 40 acres (16.6 hectares).
SE¼SE¼. Total area - 40 acres (16.6 hectares).
SE¼SE¼
T. 23 S. R. 43 W.
Sec. 4, NW¼ SW¼. Total area - 40 acres (16.6 hectares).
Sec. 5, Lot 4, Total area - 40 acres (16.6 hectares).
SW¼NE¼, Total area - 40 acres (16.6 hectares).
Sec. 10, NE¼SW¼. Total area - 40 acres (16.6 hectares).
SW¼SE¼. Total area - 40 acres (16.6 hectares).
Sec. 14, SE¼SE¼. Total area - 40 acres (16.6 hectares).
Sec. 24, NW¼NW¼. Total area - 40 acres (16.6 hectares).
T. 22 S., R. 46 W.
Sec. 29, Lot 4. Total area - 7.8 acres (3.25 hectares).

T. 21 S., R. 47 W.
Sec. 1, Lots 3,4,
and E½ of Lot 5. Total area - 114.55 acres (47.7 hectares).

T. 22 S., R. 47 W.
Sec. 26, Lots 5, 6, 7, and 8. Total area - 67.72 acres (28.2 hectares).

The 13 tracts totaling 550.78 acres (229.49 hectares) listed above have been inventoried and identified as potential waterfowl and fisheries habitat. The BLM is in the process of transferring these lands over to the Division of Wildlife with the intent of developing the land as wildlife habitat open to public use. Because of the difficulty for the BLM to manage these public lands it is believed it would be more feasible for the Division of Wildlife to control these parcels. A transfer to the Division of Wildlife is recommended.

Parcel 7 - T. 24 S., R. 47 W.
Sec. 22, NW¼NE¼. Total area - 40 acres (16.6 hectares).

This tract is located southwest of Lamar. Portions of it are in agriculture trespass. Few wildlife values are attached to this parcel and it should be disposed of.

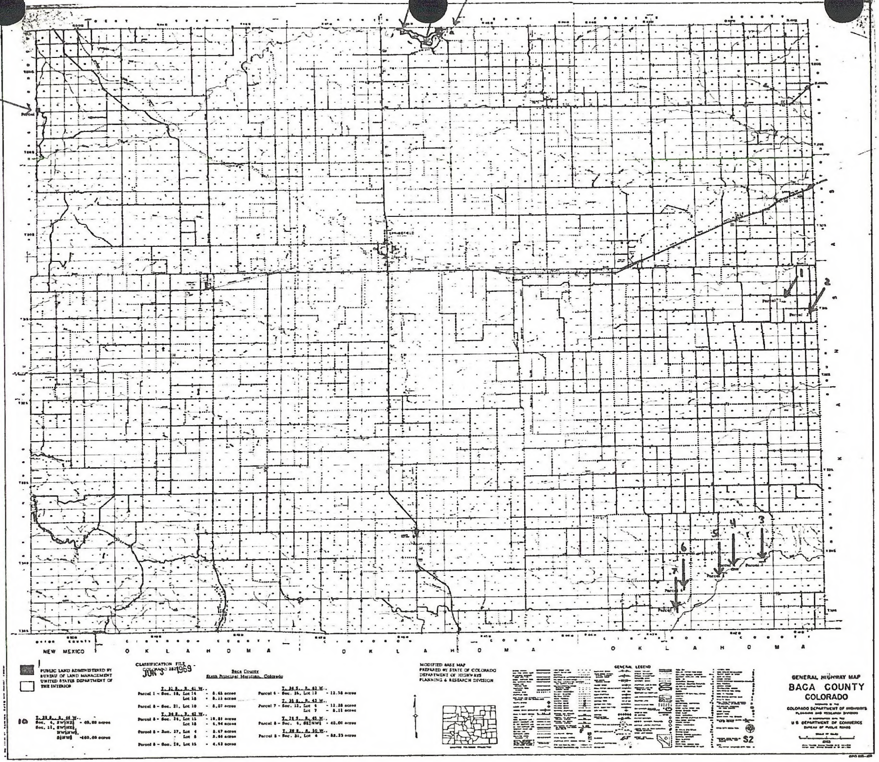

Fig 30. Public Lands administered by the BLM in Baca County, Colo.

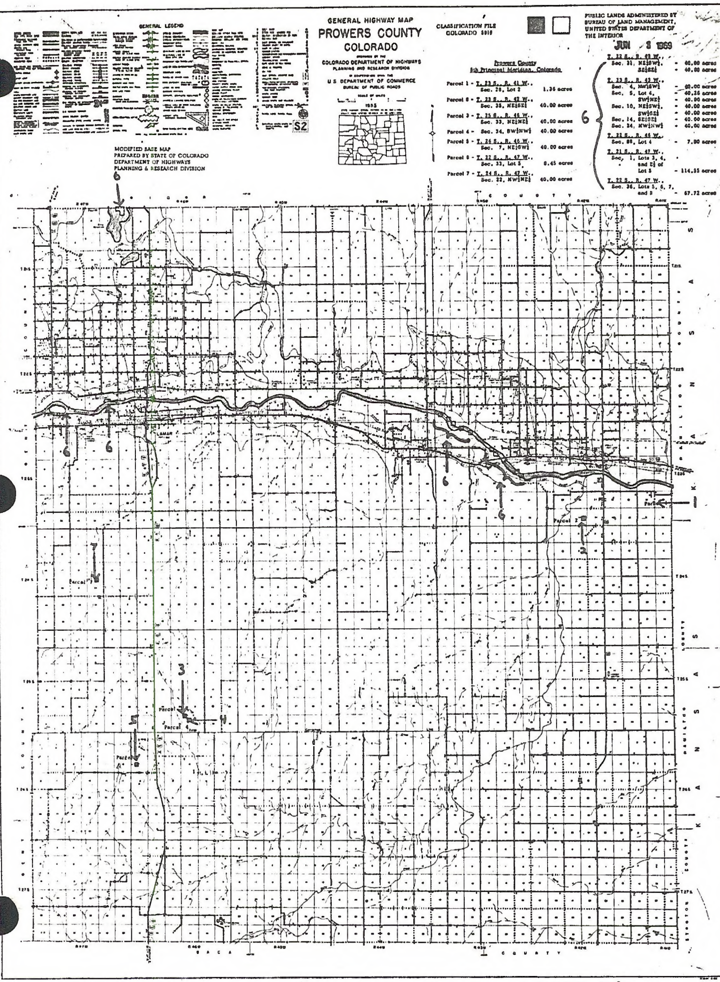

Fig. 31. Public lands administered by the BLM in Prowers County, Colo.

Conclusion

A variety of birds are present in Baca and Prowers Counties including raptors, songbirds, upland game birds and waterfowl. The threatened lesser prairie chicken has been observed during the booming season. Golden eagles are yearlong residents and the area has one of the largest wintering populations of geese in the state. Upland game birds include the ring-necked pheasant, scaled and bobwhite quail and mourning doves.

The Arkansas River and Two Buttes reservoir contain nearly all of the fishery resource. Few gamefish are found in the Arkansas River but Two Buttes reservoir contains northern pike, rainbow trout, walleye, catfish and bass.

Three activities were identified as conflicting with, and could cause adverse impacts to several species of wildlife. They are improper use of range by livestock, agriculture, and oil and gas exploration activities. While the BLM has little control over the first two, stipulations must be drawn up to prevent oil and gas exploration from infringing on critical wildlife habitat. Presently no known lesser prairie chicken booming grounds or nesting areas are located on BLM land or mineral estate. However, potential critical lesser prairie chicken habitat may be manageable by the BLM as the lesser prairie chicken continues to expand its occupied range. Care must be taken to insure that as little of this habitat as possible is disturbed or destroyed. Whenever possible drill sites and roads should be restricted to low lying areas and kept off ridge tops where booming grounds are most commonly found. If oil and gas

exploration activities are necessary near lesser prairie chicken habitat they should not be conducted from March through August. During this time the lesser prairie chicken is most vulnerable to human interference and harrassment. The birds are tolerant of limited human activities but continued harrassment is most definitely harmful.

Future studies and inventories for this species should include studying lesser prairie chicken behavior in relation to human activities. The sand-sagebrush habitat immediately south of the Arkansas River from Lamar to Holly should be inventoried for lesser prairie chickens. Ranchers in the area indicated possible sightings each spring of the species.

Surface disturbance should not be allowed in prairie dog towns where black-footed ferrets may live. Prairie dogs themselves are quickly becoming rare and must be managed properly.

Wildlife habitat must be managed for all species of wildlife. Inventories have been completed for lesser prairie chickens, black-tailed prairie dogs, black-footed ferrets, burrowing owls, golden eagles, ring-necked pheasants, scaled and bobwhite quail, mountain plover, long-billed curlews, Mississippi kites, big game, raptors and owls, waterfowl, passerines, shorebirds, predators, reptiles, amphibians and fish. A habitat inventory has also been completed for the Arkansas River fisheries. These inventories will provide the data necessary for writing both terrestrial and aquatic management plans and implementing them. The inventory data was compiled for the resources from existing BLM records, from field work initiated by BLM personnel and from contacts with local, state and federal agencies (Appendix G).

The majority of Baca and Prowers Counties will be open to oil and gas leasing and additional development needs. BLM, the U.S. Geological Survey (U.S.G.S.), and the oil and gas operators will develop drilling and reclamation plans, and design programs to provide for protection of the environment. Exploration, development and production must be constrained over the area to protect what limited resource values remain.

Cooperation between BLM, U.S.G.S. and the oil and gas companies will be required on existing oil and gas leases where occupancy should be restricted to protect critical identified resource values.

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APPENDIX A

Southeastern Colorado Bird List

	Scientific Name
Family Podicipedidae	
Eared Grebe	(*Podiceps caspicus*)
Family Phalacrocoracidae	
Double-crested Cormorant	(*Phalacrocorax auritus*)
Family Anatidae	
Canada Goose	(*Branta canadensis*)
Snow Goose	(*Chen hyperborea*)
Mallard	(*Anas platyrhynchos*)
Pintail	(*Anas acuta*)
Gadwall	(*Anas strepera*)
American Widgeon	(*Mareca americana*)
Shoveler	(*Spatula clypeata*)
Blue-winged Teal	(*Anas discors*)
Green-winged Teal	(*Anas carolinensis*)
Wood Duck	(*Aix sponsa*)
Redhead	(*Aythya americana*)
Canvas back	(*Aythya valisineria*)
Lesser Scaup	(*Aythya affinis*)
Common Goldeneye	(*Bucephala clangula*)
Bufflehead	(*Bucephala albeola*)
Ruddy Duck	(*Oxyura jamaicensis*)
Common Merganser	(*Mergus merganser*)
Family Cathartidae	
Turkey Vulture	(*Cathartes aura*)
Family Accipitridae	
Mississippi Kite	(*Ictinia misisippiensis*)
Marsh Hawk	(*Circus cyaneus*)
Rough-legged Hawk	(*Buteo lagopus*)
Ferruginous Hawk	(*Buteo regalis*)
Red-tailed Hawk	(*Buteo jamaicensis*)
Swainson's Hawk	(*Buteo swainsoni*)
Golden eagle	(*Aquila chrysaetos*)
Family Falconidae	
Prairie Falcon	(*Falco mexicanus*)
Pigeon Hawk	(*Falco columbarius*)
Sparrow Hawk (Kestrel)	(*Falco sparverius*)
Family Meleagrididae	
Turkey	(*Meleagris gallopavo*)
Family Tetraonidae	
* Lesser Prairie Chicken	(*Tympanuchus pallidic-inctus*)

	Scientific name
Family Phasianidae	
Scaled Quail	(Callipepla squamata)
Bobwhite	(Colinus virginianus)
Ring-necked Pheasant	(Phasianus colchicus)
Family Ardeidae	
Snowy Egret	(Leucophoyx thola)
Great Blue Heron	(Ardea herodias)
Reddish Egret	(Dichromanassa rufescens)
Green Heron	(Butorides virescens)
Family Rallidae	
Common Gallinule	(Gallinula chloropus)
American Coot	(Fulica americana)
Family Recurvirostridae	
American Avocet	(Recurvirostra americana)
Family Charadriidae	
Mountain Plover	(Eupoda montana)
Killdeer	(Charadrius vociferus)
Family Scolopacidae	
Long-billed Curlew	(Numenius americanus)
Upland Plover	(Bartramia longicauda)
Lesser Yellowlegs	(Totanus flavipes)
Long-billed Dowitcher	(Limnodramus Scolopaceus)
Sanderling	(Crocethia alba)
Bairds Sandpiper	(Erolia bairdii)
Least Sandpiper	(Erolia minutilla)
Family Phalaropodidae	
Wilsons Phalarope	(Steganopus tricolor)
Family Laridae	
Ring-billed Gull	(Larus delawarensis)
Forster's TErn	(Sterna forsteri)
Black Tern	(Chilidonias niger)
Family Columbidae	
Rock Dove	(Columba livia)
Mourning Dove	(Zenaidura macroura)
Family Cuculidae	
Roadrunner	(Geococcyx californianus)
Family Strigidae	
Great Horned Owl	(Bubo virginianus)
Long-eared Owl	(Asio otus)
Burrowing Owl	(Speotyto cunicularia)

	Scientific name
Family Caprimulgidae	
Common Nighthawk	(*Chordeiles minor*)
Family Alcedinidae	
Belted Kingfisher	(*Megaceryle alcyon*)
Family Picidae	
Flicker	(*Colaptes auratus*)
Ladder-backed Woodpecker	(*Dendrocopos scalaris*)
Lewis' Woodpecker	(*Asyndesmus lewis*)
Family Tryannidae	
Eastern Kingbird	(*Tyrannus tyrannus*)
Western Kingbird	(*Tyrannus verticalis*)
Family Alaudidae	
Horned Lark	(*Eremophila alpestris*)
Family Hirundinidae	
Barn Swallow	(*Hirundo rustica*)
Rough-winged Swallow	(*Stelgidopteryx ruficollis*)
Family Corvidae	
Blue Jay	(*Cyanocitta cristata*)
Steller's Jay	(*Cyanocitta stelleri*)
Black-billed Magpie	(*Pica Pica*)
Pinyon Jay	(*Gymnorhinus cyanocephalus*)
Common Raven	(*Corvus corax*)
Common Crow	(*Corvus brachyrhynchos*)
Family Troglodytidae	
House Wren	(*Troglodytes aedon*)
Rock Wren	(*Salpinctas obsoletus*)
Family Mimidae	
Mockingbird	(*Mimus polyglottos*)
Brown Thrasher	(*Toxostoma rufum*)
Family Turdidae	
Robin	(*Turdus migratorius*)
Mountain Bluebird	(*Sialia currucoides*)
Family Laniidae	
Loggerhead Shrike	(*Lanius ludovicianus*)
Family Sturnidae	
Starling	(*Sturnus vulgaris*)

	Scientific name
Family Parulidae	
Myrtle Warbler	(Dendroica coronata)
Audubon's Warbler	(Dendroica auduboni)
Yellowthroat	(Geothlypis trichas)
Family Ploceidae	
House Sparrow	(Passer domesticus)
Family Icteridae	
Western Meadowlark	(Sturnella neglecta)
Yellow-headed Blackbird	(Xanthocephalus xanthocephalus)
Red-winged Blackbird	(Agelaius phoeniceus)
Brewers Blackbird	(Euphagus cyanocephalus)
Orchard Oriole	(Icterus spurius)
Bullocks Oriole	(Icterus bullocki)
Family Fringillidae	
Rose-breasted Grosbeak	(Pheucticus ludovicianus)
Blue Grosbeak	(Guiraca caerulea)
American Goldfinch	(Spinus tristis)
Rufus-sided Towhee	(Pipilo erythrophthalmus)
Lark Bunting	(Calamospiza melanocorys)
Vesper Sparrow	(Pooecetes gramineus)
Lark Sparrow	(Chondestes grammacus)
Slate-colored Junco	(Junco hyemalia)
Oregon Junco	(Junco oreganus)
Tree Sparrow	(Spizella arborea)
Chipping Sparrow	(Spizella passerina)
White-crowned Sparrow	(Zonotrichia leucophrys)

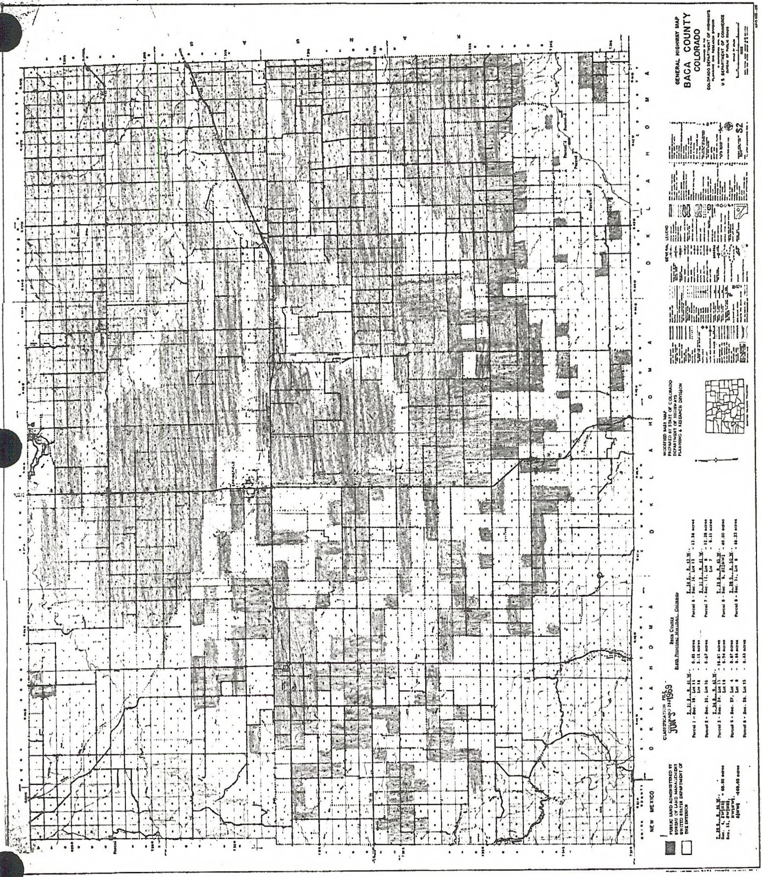
*-Threatened in Colorado

APPENDIX B

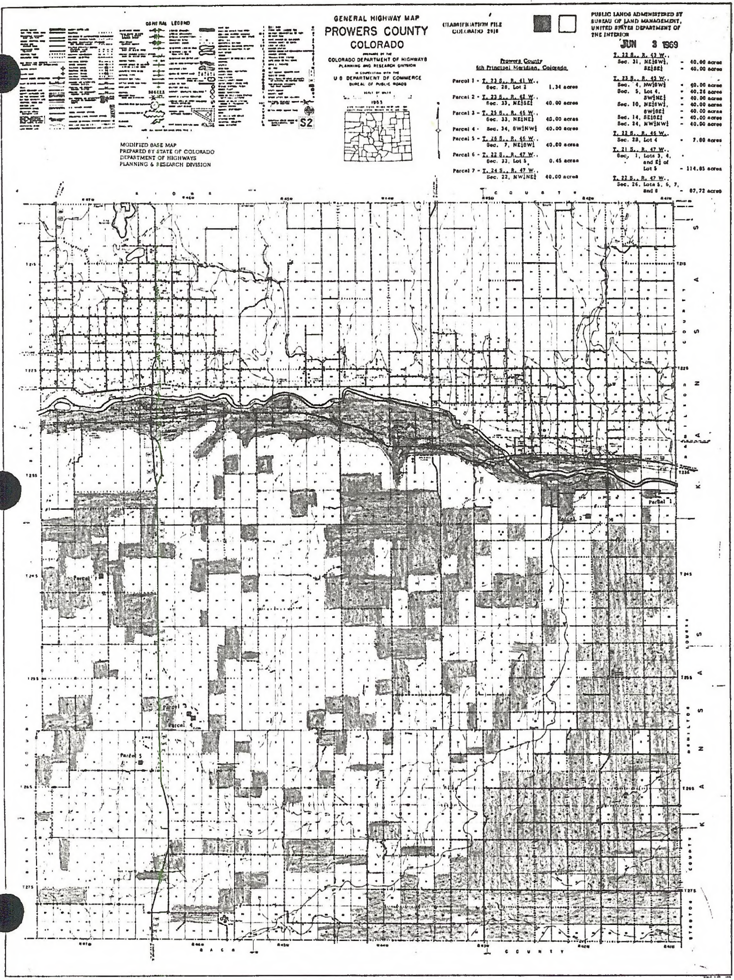
Rangeland

Cropland

Pinyon-Juniper



Land Use Map, Baca County



Land Use Map, Prowers County

APPENDIX C

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik B. Brekke Date: 5/1/77

Location: T.___ R.___ Sec.___ Land Status: Private County: Baca

Dominant Vegetation: Sand Sagebrush, Yucca, Rabbitbrush, Pricklypear, Western Wheatgrass, Buffalograss, Bluegrama, Sand dropseed, various annuals

Time: 6:15 am Weather: Partial Fog, 55°-65°, Calm

Booming Ground Number: 1

Approximate Size of ground occupied: 10 yds x 20 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
16	0	0	=	16

Comments and Observations: This ground appeared very active. Of all the habitat in the area, the area where this ground was, was in the best habitat. Suitable booming areas are rare and this ground was in a depression but one of the few areas of low enough vegetation. Care must be taken so that no more of this land is plowed up. Good potential for continuing chicken success.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik B. Buelle [illegible] Date: 5/8/77

Location: T. ___ R. ___ Sec. ___ Land Status: Private County: Roosevelt

Dominant Vegetation: Sand Sagebrush, Yucca, Rabbitbrush, Prickly pear, Western Wheatgrass, Buffalograss, Blue grama, Sand dropseed, annuals

Time: 6:30 am Weather: Partial Fog, 55°-65°, Calm

Booming Ground Number: 2

Approximate Size of ground occupied: 10 x 15 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
10	0	0	=	10

Comments and Observations: This ground was very nearly in the same condition as #1. Both were located in the same habitat and very active. This ground was also located in a low vegetation clearing appropriate for booming. Nearest human activity - 2 miles. See also comments for #1

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Paul B. Buckle   Date: 5/1/77

Location: T.____ R.____ Sec.____ Land Status: Private   County: Baca

Dominant Vegetation: Sand Sagebrush, Yucca, Rabbitbrush, Pricklypear, Western Wheatgrass, Buffalo grass, Blue grama, Sand dropseed, annuals

Time: 8:00 am   Weather: Partial Fog, 55°-60°, Calm

Booming Ground Number: 3

Approximate Size of ground occupied: 20 x 20 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
14	0	0	=	14

Comments and Observations: This ground was hardest to find as it was not near any previous ground. I suspect this ground moves from year to year. The habitat is not as good here but very isolated from activity. Ground was very near a windmill and water tank. Moderate grazing has left vast areas suitable for booming unlike previous two grounds.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Earl B. [illegible]   Date: 4/13/77

Location: T.___ R.___ Sec.___ Land Status: USFS   County: Baca

Dominant Vegetation: Sand Sage, Yucca, Buffalograss, Dropseed, Red threeawn, Blue grama, [illegible], Bottlebrush, Ring Muhly, Western Wheatgrass, Little Bluestem, Sideoats grama, Indian Ricegrass, [illegible]

Time: 6:45 am   Weather: Rain, Cloudy, 15-25mph wind, 50°-55°

Booming Ground Number: 4

Approximate Size of ground occupied: 20 x 30 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
18	0	0	=	18

Comments and Observations: Habitat here is very good with virtually all plants listed above commonly seen. Again suitable booming areas were scarce and this grounds was located on a bare spot on the side of a hill. Vegetation on the ground much thicker + higher than usual. Good potential here. At least 2 booming grounds south of here in Oklahoma were heard. I suspect there could be some trading of birds.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: [illegible]   Date: 4/18/77

Location: T.___ R.___ Sec.___ Land Status: [illegible]   County: [illegible]

Dominant Vegetation: Sand Sage, Yucca, Dropseed, Three-awn, Bluegrama, Buffalograss, [illegible] Indian Ricegrass [illegible]

Time: 9:00 am   Weather: Rain, Cool, Windy [illegible]

Booming Ground Number: 5

Approximate Size of ground occupied: 10 x 10 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
0	0	3	=	3

Comments and Observations: I am [illegible] while [illegible] ground. [illegible] I [illegible] of birds from the [illegible] but I [illegible] heard booming. I suspect [illegible] by a few birds [illegible] booming ground here. Vegetation is of medium height & habitat is very good.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik B Buehler Date: 4/19/77

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Sand Sage, Yucca, Pricklypear, Sanddropseed, Red threeawn, Bluegrama, Buffalograss, Rabbitbrush, Western Wheatgrass

Time: 9:15 am Weather: Rain, Wind 20-30 mph, 50°-55°, Cloudy

Booming Ground Number: 6

Approximate Size of ground occupied: 20 x 30 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
20	0	0	=	20

Comments and Observations: This ground was located on a big hill with low vegetation. Perfect ground with consistent high counts. Habitat poor East for 1/4 mile, Good West. Booming area placed in short vegetation on heavily grazed hillside. This ground is definitely a strong, well established ground. At least 1 other ground could be heard from the south in Oklahoma. Grazing go could be monitored more closely here.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Paul B. B[illegible] Date: 4/6/77

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Sand Sage, Yucca, Sand dropseed, Red threeawn, Blue grama, Buffalograss, Rabbitbrush, Pricklypear, Little Bluestem, Sideoats grama, Indian Ricegrass

Time: 7:45 am Weather: Clear, 50-55°, Wind 5-10 mph.

Booming Ground Number: 7

Approximate Size of ground occupied: 10 x 20 ft

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
8	0	0	=	8

Comments and Observations: This ground was one of the smaller ones and less active. It was located on a bare spot on a small ridge in fair habitat. The ground had constant counts of 7-8 birds. It seemed to be a ground that didn't boom much but had birds.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: [illegible] Date: 4/19/77

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Sand Sage, Yucca, [illegible], Sand dropseed, Red threeawn, Blue grama, Buffalograss, [illegible], Sideoats grama, [illegible] wheatgrass

Time: 8:30 am Weather: Rain, Cloudy, Wind 30 mph, 50°-60°

Booming Ground Number: 8

Approximate Size of ground occupied: 30 yds. x 10 yds.

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
13	0	0	=	13

Comments and Observations: This ground was very active and evidently in use. It was located on a bare spot on the highest ridge in the area. It was a "Classic" booming area. The habitat here is good to excellent. The ground was always active with booming heard from 1 mile away. This ground is one of the strongest in the area.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Earl B. [illegible] Date: 3/31/77

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Sand Sage, Yucca, Switchgrass, Bluestem, Buffalograss, [illegible], Russian thistle, Western wheatgrass, Little bluestem, Silver bluestem, Sand dropseed

Time: 6:30 am Weather: Clear, Cool, Calm 45°-55°

Booming Ground Number: 9

Approximate Size of ground occupied: 10 × 10 yds.

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
7	0	0	=	7

Comments and Observations: This ground was one of the weakest in the area. It was located on a high bare ridge in good habitat. Several times I checked the ground I only found 2-3 birds and sometimes none. I suspect birds from this ground have been moving to other grounds in the area. This area could decrease till the ground is abandoned

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: [illegible] Date: 4/5/77

Location T. R. Sec. Land Status: USFS County: Baca

Dominant Vegetation: Sand Sage, Yucca, Prickly pear, Sand dropseed, Red three-awn, Blue grama, Buffalo grass, [illegible], Ring Muhly, Western wheatgrass, Little bluestem, Sideoats grama [illegible]

Time: 5:30 am Weather: Clear, Breezy, 40°-30°

Booming Ground Number: 10

Approximate Size of ground occupied: 30 x 20 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
18	0	0	=	18

Comments and Observations: This ground was one of the most active ground. It is protected on a park and gets considerable visitation. It is located on a large bare area in good habitat. All my pictures & observations were on this ground. I noticed that large counts were made early and as the season progressed and the ground was bothered the numbers dropped to 13 or 14 consistently. In the future human activity might hurt this area.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik Brekke Date: 5/3/7

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Yucca, Sand Sage, Sand dropseed, Red threeawn, Blue grama, Buffalograss, Rabbitbrush, Ring Muhly, Western Wheatgrass, Pricklypear, Little Bluestem, Sideoats grama, Foxtail Barley

Time: 8:30 am Weather: Clear, 50°-60°, Windy 20-30mph

Booming Ground Number: 11

Approximate Size of ground occupied: 30 yds x 30 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
21	2	0	=	23

Comments and Observations: This was the only ground in which I consistently saw hens. As a result booming was very active. Counts on this ground were always high. I suspect birds from #9 + #10 may be moving to this ground. It was located in a corner of fences trampled + eaten down by cattle. It was near a ridge but was the only open area. Good potential here. No roads near. Saw birds here sitting on fence wires. Excellent habitat all around.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik S Brekke Date: 4/19/77

Location: T.__ R.__ Sec.__ Land Status: USFS County: Baca

Dominant Vegetation: Yucca, Sand Sage, Sand dropseed, Buffalograss, Bluegrama, Little Bluestem, Red threeawn, W. Wheatgrass, Sideoats grama, Pricklypear, Rabbitbrush

Time: 5:45 am Weather: Rain, Cloudy, Wind 20-30 mph, 50°-55°

Booming Ground Number: 12

Approximate Size of ground occupied: UNKNOWN

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
0	0	1	=	1

Comments and Observations: This is the only place I wasn't sure of the existance of a ground or not. I saw a chicken in this area & heard booming only once. Was not able to locate the source. I was told by the WCO that several birds were released in this area but hadn't become established. Theres some good habitat here. This area should be searched each year to see if the birds begin active booming.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik B Buebka Date: 4/14/77

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Yucca, Pricklypear, Sand Sage, Little Bluestem, Sand Dropseed, Bluegrama, Red threeawn, W. Wheatgrass, Sideoats grama, Indian Ricegrass, Rabbitbrush

Time: 6:00 am Weather: Cloudy, 50°-55°, 15-25 mph wind.

Booming Ground Number: 13

Approximate Size of ground occupied: 5 yds × 15 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
6	0	0	=	6

Comments and Observations: From previous info this ground appears to have moved about 2 miles to better habitat. Only a small ground in poor booming area. Small depression of short vegetation. Habitat here is the best I've seen anywhere. Very little grazing apparent. This particular area is not large and would not support alot of chicken but I suspect theres still room for more. Good area to do some transplanting.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik B Bucholz Date: 5/24/7

Location: T.___ R.___ Sec.___ Land Status: USFS County: Baca

Dominant Vegetation: Sand Sage, Yucca, Sand dropseed, Red threeawn, Blue grama, Foxtail Barley, Buffalograss, Rabbitbrush, W. Wheatgrass, Pricklypear, Little Bluestem, Sideoats grama,

Time: 7am Weather: Clear, Calm, Warm 50°-60°

Booming Ground Number: 14

Approximate Size of ground occupied: 10 x 10 yds

BIRDS OBSERVED

Cocks	Hens	Unclass.		Total
2	0	0	=	2

Comments and Observations: Previous data on this ground indicate it was abandoned in 1972. There is a large chunk of USFS land here with excellent habitat so I checked it for chickens. Only two birds were on the largest, barest ridge in the area. Very little booming was heard. This whole area has very good potential to support more chickens. This would also be a good area in which to transplant more chickens to support the present pop.

Lesser Prairie Chicken
Booming Ground
Report Form

Recorder: Erik B Bubbke Date: 4/16/77

Location: T.____ R.____ Sec.____ Land Status: Private County: ~~B~~ Prowers

Dominant Vegetation: Sand Sagebrush, Yucca, Sand dropseed, Little Bluestem, Sideoats grama, Red threeawn, Western wheatgrass, Blue grama

Time: 6 am Weather: Cool 45-55°, Clear, Slight breeze

Booming Ground Number: 15

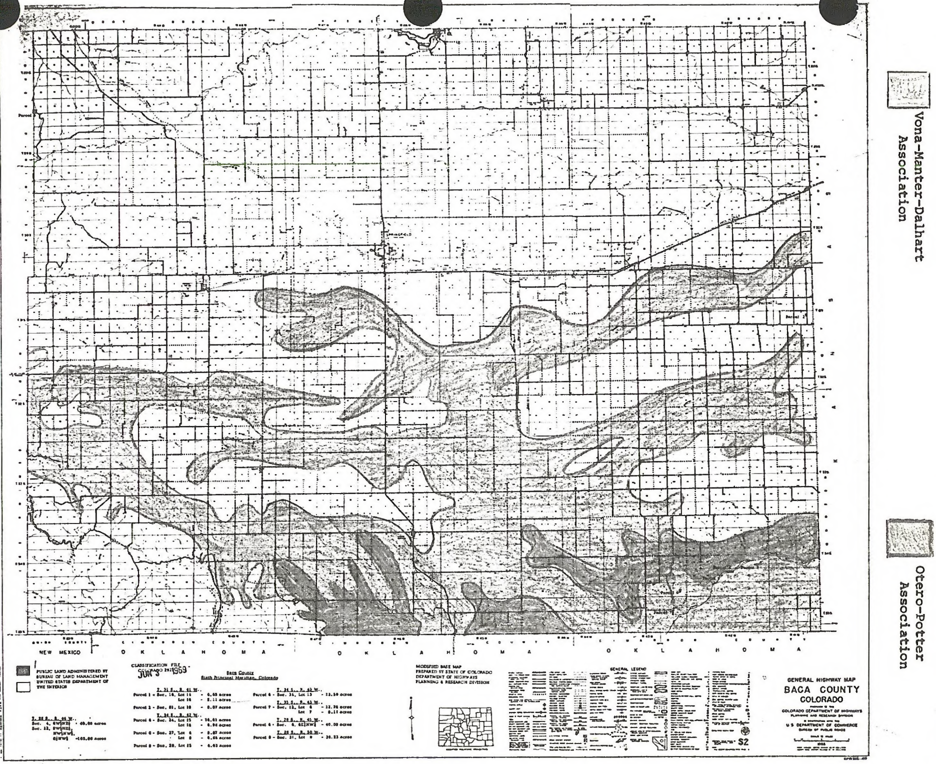
Approximate Size of ground occupied: 30 x 30 yds

BIRDS OBSERVED

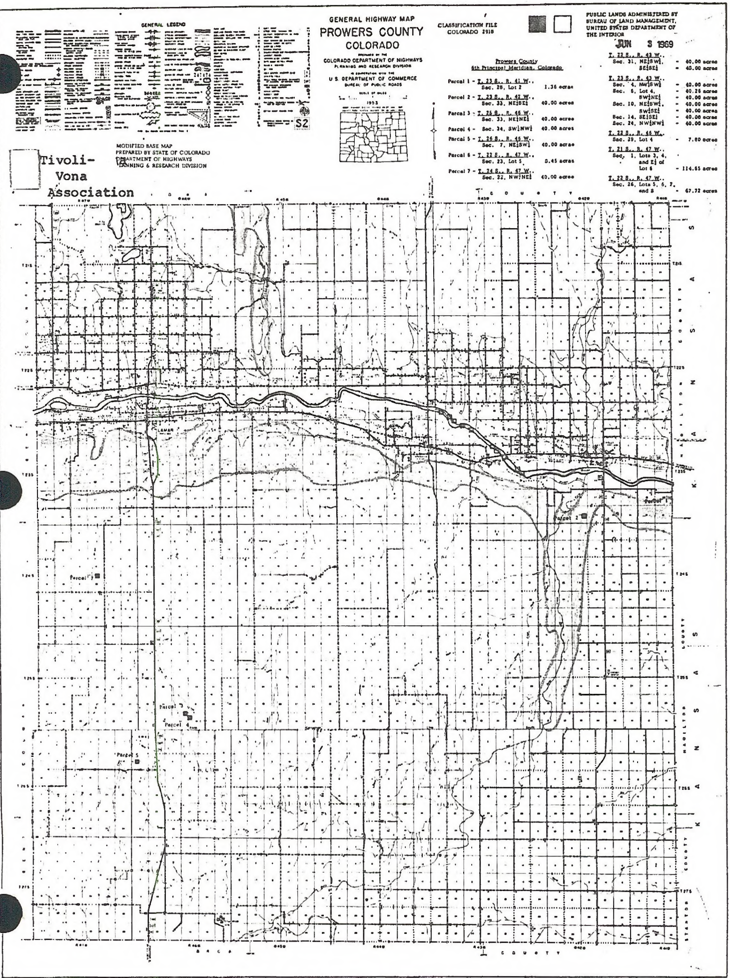
Cocks	Hens	Unclass.		Total
46	4	8	=	58

Comments and Observations: This ground was easily located due to the excessive booming noises. It was on a bare, low, flat spot near a drainage. This area previously had 2 grounds and I suspect these combined to form this large one. Because 4 hens were present excessive booming and activity was observed. Habitat here is disappearing fast with areas of sage plowed under to increase grasses. Area is heavily grazed also. My recommendation would be to trap some of these birds and transplant them. I suspect that in a few years this whole area might be plowed under.

APPENDIX D



Sandy soils of Baca County



Sandy soils of Prowers County

APPENDIX E

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik R. Brekke Date: 2/24/77

Location: T. 29S R. 42W Sec. NW NW 5 Land Status: Private County: Baca

Dominant Vegetation: Rubber Rabbitbrush, Blue Grama, Buffaloe Grass Sand Dropseed, Yucca, Cactus

Approximate size of town: ~ 100 acres

Approximate number of animals: 150 - 200

Prairie Dog Town Number 1

Black-footed ferret sign or activity: NONE

Comments and Observations: Town very close to road. Has room to expand, appears to be a fairly new town. In grazed pasture.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Bubke Date: 2/23/77

Location: T. 27S R. 45W Sec. N 1/2 30 Land Status: Private County: Prowers

Dominant Vegetation: Yucca, Russian thistle, Buffalo grass Blue Grama. Severe grazing pressure.

Approximate size of town: ~ 90 acres

Approximate number of animals: ~180 - 200

Prairie Dog Town Number 2

Black-footed ferret sign or activity: None

Comments and Observations: Located directly east of Two Buttes. A good size town, much room to expand. No indication nearby to ruin town. Few plant species were found because of the severe grazing pressure.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Enla B Bribbs Date: 2/28/77

Location: T. 27S R. 46W Sec. 36 Land Status: Private County: Prowers

Dominant Vegetation: Yucca, Russian thistle, Buffalo grass

Blue Grama. Severe grazing pressure.

Approximate size of town: 10 acres

Approximate number of animals: ~50 dogs

Prairie Dog Town Number 3

Black-footed ferret sign or activity: None

Comments and Observations: This is a small new town that could be an extension of the town to the Northeast. Room to expand limited by road. Again an area of severe grazing pressure.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B. Brubaker Date: 3/2/77

Location: T. 28S R. 46W Sec. N½ 18 Land Status: Private County: Baca

Dominant Vegetation: Overgrazed + cropped close by dogs + cattle. Only apparent veg. was Buffalo Grass + Blue Grama, Yucca,

Approximate size of town: 80 acres

Approximate number of animals: ~80

Prairie Dog Town Number 4

Black-footed ferret sign or activity: None

Too close to human activity + town under stress.

Comments and Observations: This Town was directly across the way from a farmhouse in a cattle pasture. No room for expansion. A good candidate for poisoning which might have been carried out somewhat already as few dogs were seen.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B. Bublitz Date: 3/2/77

Location: T. 28S R. 48W Sec. 35 + 36 Land Status: Private County: Baca

Dominant Vegetation: Heavily grazed area. Occasional Yucca, Blue Grama, Buffalograss, + Sand Dropseed

Approximate size of town: 10 acres

Approximate number of animals: ~50

Prairie Dog Town Number 5

Black-footed ferret sign or activity: None

Town too small + limited.

Comments and Observations: Town was [illegible] on small section of grazed land surrounded by agriculture. Town appears stable but has no room for expansion or growth.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Earl B. [illegible] Date: 3/7/77

Location: T. 25S R. 46W Sec. 7 (E 1/2) Land Status: 1/2 [illegible] 1/2 Private County: [illegible]

Dominant Vegetation: Heavily grazed pasture near abandoned house [illegible], buffalograss, blue grama, sand dropseed

Approximate size of town: ~80 acres

Approximate number of animals: ~100 - 175

Prairie Dog Town Number 6

Black-footed ferret sign or activity: None - Too close to human activity. Probably poisoned a few years back.

Comments and Observations: At one time the town was much larger. About 3/4 of the town was [illegible] - poisoned couple summers [illegible] near the old building and were spreading into the [illegible] range. Room for expansion.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Earl B. Ruble Date: 3/13/77

Location: T. 29S R. 41W Sec. 30 Land Status: Private County: Baca

Dominant Vegetation: Yucca, Buffalograss, Bluegrama, Pricklypear cactus, sand dropseed, various annuals

Approximate size of town: ±30 acres

Approximate number of animals: ~50 dogs

Prairie Dog Town Number 7

Black-footed ferret sign or activity: None, not a big town and none others in area.

Comments and Observations: This was a small, new dog town, appears relatively undisturbed. Has a large area to expand. Good potential.

PRAIRIE DOG TOWN REPORT FORM

Recorder: E. B. [illegible] Date: 3/15/77

Location: T. 32S R. 50W Sec. 4 Land Status: USFS County: Baca

Dominant Vegetation: Blue grama, Buffalograss, Yucca, Prickly-pear, rabbitbrush. Occasional sand dropseed + red threeawn

Approximate size of town: ~ 80 acres

Approximate number of animals: 100 - 150

Prairie Dog Town Number 8

Black-footed ferret sign or activity: None - very close to highway 160.

Comments and Observations: Appeared to be fairly new. All burrows occupied. This town was very close to the highway but it was on the USFS grassland and had room for expansion. Location not previously mapped by USFS

PRAIRIE DOG TOWN REPORT FORM

Recorder: Eric B. [illegible]   Date: 3/24/77

Location: T. 32S R. 47 Sec. 16 Land Status: Private County: Baca

Dominant Vegetation: Yucca, prickly pear, Buffalograss, Blue Grama and Sand Dropseed

Approximate size of town: ~ 100 acres

Approximate number of animals: ~ 50 animals

Prairie Dog Town Number 9

Black-footed ferret sign or activity: None

Comments and Observations: Most of this ~~town~~ appears to have been wiped out by either poison or plague. I saw several (5-10) Burrowing Owls that have taken up residence in the [illegible] and holes. Dogs could make a comeback. Not all dead.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B. [illegible] Date: 3/24/77

Location: T. 33S R. 47 Sec. 2 Land Status: Private County: Baca

Dominant Vegetation: Yucca, saltbush, Prickly pear, Blue grama, Buffalograss, Sand dropseed

Approximate size of town: ~30 acres

Approximate number of animals: 0 - 20 animals

Prairie Dog Town Number 10

Black-footed ferret sign or activity: None

Town has almost totally been wiped out.

Comments and Observations: Appears to area be inactive. No animals were seen although I believe there are a few. The area again has been used & is being used by several Burrowing Owl. Town hit by plague or poisoning.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B. Bulle   Date: 3/24/77

Location: T. 34S R. 47W Sec. 5 Land Status: Private County: Baca

Dominant Vegetation: Pricklypear, occasional Yucca, Blue grama, Buffalo grass, Russian thistle, Sand dropseed.

Approximate size of town: ~ 50 acres

Approximate number of animals: ~ 10 - 50 animals

Prairie Dog Town Number 11

Black-footed ferret sign or activity: No sign - marked on map as possible ferret habitat. Wiped out.

Comments and Observations: Town mostly ~~[illegible]~~ out by plague in previous last year. Few animals seen. Several Burrowing Owls have taken up residence. Town close to farm and very near road.

PRAIRIE DOG TOWN REPORT FORM

Recorder: [illegible] Date: 3/25/77

Location: T. 33S R. 49W Sec. 33 Land Status: Private County: Baca

Dominant Vegetation: Occasional Yucca + rabbitbrush. Dominant Blue grama, Buffalograss + Red Threeawn.

Approximate size of town: ~ 20 acres

Approximate number of animals: ~ 50 animals

Prairie Dog Town Number 12

Black-footed ferret sign or activity: None

Comments and Observations: Town was very small and doing well. Has much room for expansion - strictly grasslands in the vicinity. An isolated town. Good potential

PRAIRIE DOG TOWN REPORT FORM

Recorder: [illegible] Date: 3/28/77

Location: T. 32S R. 52W Sec. 23 Land Status: USFS County: Baca

Dominant Vegetation: Overgrazed grass + prickly pear and rabbitbrush. Dominant blue grama, buffalograss, sand dropseed + Russian thistle

Approximate size of town: ~100 acres

Approximate number of animals: ~200 300 animals

Prairie Dog Town Number 13

Black-footed ferret sign or activity: NONE

Comments and Observations: The largest town I've seen thus far. Appears fairly new and stable. Population much higher than other "dead" towns in the near area. Good room for expansion. I don't believe the USFS knows about this town.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Earl B. [illegible] Date: 3/29/77

Location: T. 33S R. 42W Sec. 22 Land Status: Private County: Baca

Dominant Vegetation: Buffalograss, Blue grama, Sand dropseed, Red threeawn - occasional Yucca, ~~[illegible]~~ Rabbitbrush + Prickly pear

Approximate size of town: ~80 acres

Approximate number of animals: ~100-125 animals

Prairie Dog Town Number 14

Black-footed ferret sign or activity: None - too close to a ranch and much too close to a road.

Comments and Observations: Appeared to be an active town. Doing well considering its poor location. Has little or no room for expansion. No plague or poisoning problem.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Eide B Brebbe Date: 4/27/77

Location: T. 33S R. 48W Sec. 28 Land Status: USFS County: Baca

Dominant Vegetation: Buffalograss, Bluegrama, Sand dropseed occasional cholla cactus + pricklypear. Common annuals

Approximate size of town: 2 - 5 acres

Approximate number of animals: ~ 50 - 75 animals

Prairie Dog Town Number 15

Black-footed ferret sign or activity: None - very small town and just getting started - close to road.

Comments and Observations: This town appear very new with almost all burrows occupied. Has lots of room and potential for expansion. Saw several burrowing owls and long-billed Curlews in the area.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Brekke Date: 4/27/77

Location: T. 33S R. 46W Sec. 20 Land Status: Private County: Baca

Dominant Vegetation: Blue grama, Buffalograss, Sand dropseed, Red threeawn. Occasional Yucca, Sand Sage + Pricklypear

Approximate size of town: ~30 acres

Approximate number of animals: ~70 animals

Prairie Dog Town Number 16

Black-footed ferret sign or activity: None - heavily grazed, near homes + highway.

Comments and Observations: This town appears bigger than it actually is. Many abandoned burrows occupied by Owls. Very near highway + 2 farms. Appears heavily grazed and has little room for expansion. Poison or disease has limited this town.

PRAIRIE DOG TOWN REPORT FORM

Recorder: [illegible] Date: 5/10/77

Location: T. 27S R. 44 Sec. 7 Land Status: Private County: Prowers

Dominant Vegetation: Pricklypear, Blue grama, Buffalograss and Sand dropseed. Various low growing annuals

Approximate size of town: ~80 acres

Approximate number of animals: ~50-60 animals

Prairie Dog Town Number 17

Black-footed ferret sign or activity: NONE

Comments and Observations: This town appeared quite large but few dogs were seen. Cattle grazed among the dogs. I suspect poison or disease has hurt them. Will probably grow back. Good area - room for expansion.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Buebbe Date: 5/10/77

Location: T. 27S R. 46 Sec. 10 + 11 Land Status: Private County: Prowers

Dominant Vegetation: Pricklypear, Bluegrama, Buffalograss, Sand dropseed + Red Threeawn. Occasional Yucca and Sand Sage

Approximate size of town: ~150 acres

Approximate number of animals: ~25 - 75 animals

Prairie Dog Town Number 18

Black-footed ferret sign or activity: NONE

Comments and Observations: This town appeared hurting also. Was once a large area now only a few dogs were seen and burrows were unused. Again disease or poison has hurt. Town could come back, good room for expansion and reestablishment.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Brekke Date: 5/10/77

Location: T. 27S R. 46W Sec. 31 Land Status: Private County: Prowers

Dominant Vegetation: Sand Sage, Yucca, Blue grama, Buffalograss, Red threeawn, Pricklypear and Sand dropseed.

Approximate size of town: ~100 acres

Approximate number of animals: ~25 - 75 animals

Prairie Dog Town Number 19

Black-footed ferret sign or activity: None - located right off highway (US 287)

Comments and Observations: Again this town once appeared very large but now very limited. Its location was not in the P. Dogs favor. Near highway and homes. Prairie Dogs could become established again.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Bubble Date: 5/14/77

Location: T. 28S R. 46W Sec. 6 Land Status: Private County: Baca

Dominant Vegetation: Buffalograss, Bluegrama, Sand dropseed and various annuals. Occasional Yucca, Pricklypear + rabbitbrush

Approximate size of town: ~ 300 acres

Approximate number of animals: ~200-300 animals

Prairie Dog Town Number 20

Black-footed ferret sign or activity: NONE

Comments and Observations: This town was one of largest seen to date. Was back off main road in private pasture and appeared to be doing well. Most burrows were active. Much room for expansion to east and south. Suspect little disease or poisoning. Part of this town extends into BLM property on Two Buttes Creek.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Bubbe Date: 5/16/77

Location: T. 27S R. 47W Sec. 28 Land Status: Private County: Prowers

Dominant Vegetation: Yucca, Rabbitbrush, Pricklypear, Barrel Cactus, Blue grama, Buffalograss, Foxtail Barley, Red Threeawn, various annuals

Approximate size of town: ~ 5 acres

Approximate number of animals: ~75 - 100 dogs

Prairie Dog Town Number 21

Black-footed ferret sign or activity: None - relatively new town + small for ferrets.

Comments and Observations: This town was in a ravine and had much room to expand. It appeared to be new with all burrows occupied. I believe "baby" dogs are now out. Will soon have to spread out to accomodate all new individuals.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Bulke Date: 5/16/77

Location: T. 27S R. 44W Sec. 29 Land Status: Private County: Prowers

Dominant Vegetation: Pricklypear, Bluegrama, Buffalograss and Red threeawn with dispersed annuals

Approximate size of town: ~ 10 acres

Approximate number of animals: 20-50 dogs

Prairie Dog Town Number 22

Black-footed ferret sign or activity: None, heavily used pasture + near farm + 2 county roads.

Comments and Observations: This town appeared to be barely surviving from either poison or the plague. Was set in pasture heavily grazed. Can expand to 40 acres in size if can survive, I suspect this will always be a small population.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Grebbe Date: 5/26/77

Location: T. 27S R. 44 Sec. ____ Land Status: Private County: Prowers

Dominant Vegetation: Bluegrama, Buffalograss, Foxtail Barley, Barrel Cactus, Yucca, Pricklypear, Rabbitbrush, Red threeawn, various annuals

Approximate size of town: 300 - 400 acres

Approximate number of animals: 100 - 125

Prairie Dog Town Number 23

Black-footed ferret sign or activity: None visable, this town was much to big to cover completely. Because of its size it has good potential for ferrets.

Comments and Observations: This town appeared to have been nearly wiped out by disease or poison. It was a very large area connecting across roads with # 26. There is plenty of good habitat here + dogs should repopulate area.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik Bruble   Date: 5/26/77

Location: T. 27S R. 42W Sec. 35 Land Status: Private County: Prowers

Dominant Vegetation: Blue grama, Buffalograss, Foxtail Barley, Barrel Cactus Yucca, Pricklypear, rabbitbrush, Red threeawn, various annuals.

Approximate size of town: ~ 10 acres

Approximate number of animals: 50-100 dogs

Prairie Dog Town Number 24

Black-footed ferret sign or activity: None - to close to road + too small

Comments and Observations: This was a small town near the highway appeared held in check by the farmers. Not much room for expansion.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Brebske Date: 5/26/77

Location: T. 26S R. 41W Sec. 31 + 32 Land Status: Private County: Prowers

Dominant Vegetation: Pricklypear, Bluegrama, Buffalograss, Western Wheatgrass, Sand Dropseed + various annuals

Approximate size of town: ~ 80 acres

Approximate number of animals: 200-350 dogs

Prairie Dog Town Number 25

Black-footed ferret sign or activity: None - not a large town ~~but~~ and little room for expansion but very high population of dogs.

Comments and Observations: This was the most active town I have seen yet. Only 80 acres but dogs were really packed in. Many "baby" dogs getting out. Burrowing Owls also present. Good area for disease to strike.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Curt B. Brebbe Date: 5/26/77

Location: T. 26S R. 43W Sec. 32 (28, 29) Land Status: Private County: Prowers

Dominant Vegetation: Buffalograss, Blue grama, Pricklypear, Western Wheatgrass, Sand Dropseed + various annuals

Approximate size of town: 600-700 acres

Approximate number of animals: 1000 - 2000 dogs

Prairie Dog Town Number 26

Black-footed ferret sign or activity: Again no ferret sign was seen but area was so large only small part were looked at. Good isolated area.

Comments and Observations: This area is an excellant prairie dog area. Town is large with good habitat and very isolated from humans. No control seen in past years. Excellent ferret potential in this area.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Bubbe Date: 5/26/77

Location: T. 26S R. 45W Sec. 21 Land Status: Private County: Prowers

Dominant Vegetation: Pricklypear, Foxtail Barley, Bluegrama, Buffalograss, Red threeawn, Various annuals.

Approximate size of town: ~60 acres

Approximate number of animals: 100 - 200 dogs

Prairie Dog Town Number 27

Black-footed ferret sign or activity: NONE - small, poor, habitat.

Comments and Observations: Town appeared fairly active although habitat here wasn't the best. Grazing heavy on area. Some room for expansion. Few humans around. Fairly close to road.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Eric B Bubble Date: 6/6/77

Location: T. 26S R. 47w Sec. 4 Land Status: Private County: Prowers

Dominant Vegetation: Yucca, Bluegrass, Buffalograss, Red threeawn, Rabbitbrush, Foxtail Barley

Approximate size of town: ~15 acres

Approximate number of animals: ~50-75 dogs

Prairie Dog Town Number 28

Black-footed ferret sign or activity: None - new area

Comments and Observations: Only a small town that appeared relatively new. Many young visible. Good town, can expand east. Burrowing Owls also present.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik B Buehlke Date: 6/6/77

Location: T. 26 S R. 46 w Sec. 1 Land Status: Private County: Prowers

Dominant Vegetation: Yucca, Pricklypear, Red threeawn, Blue grama, Buffalograss, Western Wheatgrass, Foxtail Barley, Dropseed.

Approximate size of town: ~ 1 - 2 acres

Approximate number of animals: ~ 30 animals

Prairie Dog Town Number 29

Black-footed ferret sign or activity: None - small town - no others in vicinity

Comments and Observations: Town appeared brand new - 20-30 burrows, No young seen. Good area to expand. No other towns in area. Face poisoning from rancher.

PRAIRIE DOG TOWN REPORT FORM

Recorder: Erik Reubbh Date: 6/6/77

Location: T. 25S R. 45S Sec. 18 Land Status: Private County: Prowers

Dominant Vegetation: Yucca, Pricklypear, Bluegrass, Buffalograss, Red threeawn, Foxtail Barley, Western Wheatgrass, Sand dropseed.

Approximate size of town: ~1-2 acres

Approximate number of animals: ~20 dogs

Prairie Dog Town Number 30

Black-footed ferret sign or activity: None - small new town near road.

Comments and Observations: Again the town was awfully small + newly formed - about 20 burrows - all occupied. No young seen - expandable in all directions.

APPENDIX F

APTOR NEST LOCATION

SPECIES Swainsons Hawk

NEST NR. ______

NEST ELEVATION 4000

NEST LOCATED IN Tree

HEIGHT OF TREE OR CLIFF 25 ft

HEIGHT OF NEST ABOVE GROUND 23 ft

GENERAL AZIMUTH OF NEST EXPOSURE

All directions

ACTUAL AZIMUTH OF NEST EXPOSURE

All directions

MILEAGE TO NEAREST RIVER Arkansas North 35 miles

MAP

QUAD. MAP Two Buttes

T. 28S R. 44W

S. 33 ¼S. NW

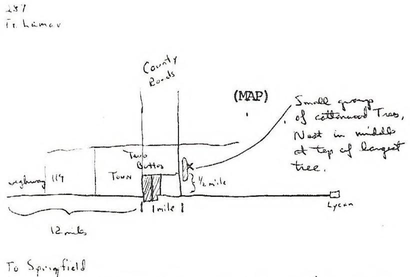
MILES TO HUMAN DISTURB. 20 ft

TYPE OF DISTURBANCE Co. Road

NEST FRONTAGE ______

VEG. OF AREA all agriculture in corn + wheat

(MAP)



(PHOTOGRAPH)

HOW TO FIND NEST: After entering Two Buttes continue on through about 3/4 mile and make the first left possible. Travel 1/4 - 3/4 mile looking for Cottonwood clumps on left. Nest is located in longest tree in clump. Rather hard to see.

RAPTOR NEST SURVEY

Year	77	78	79	80	81	82	83	84	85	86	87
Nest Condition	2										
Activity at Nest	5,3										
Adults in Nest Territory	2										
Age of Young	unknown										
Number of Eggs	↓										
Number Eggs Hatched	↓										
Number Fledged	↓										
Nest Destroyed	No										

NEST CONDITION

1. Good-New Material Seen
2. Fair-Old Material Only
3. Poor-Stable
4. Poor-Unstable
5. Remnant Only

ACTIVITY AT NEST

0. No Activity
1. Material added to Old Nest
2. New Nest Under Construction
3. Nest Found Since Last Survey
4. Adult with Nest Material
5. Adult on Nest
6. Whistling Adult
7. Adult on Nest Tree
8. Pair on Nest Tree
9. Pair on the Nest

ADULTS IN NEST TERRITORY

1. None Observed
2. 1 Adult at or Near Nest
3. Pair at or Near Nest
4. 1 Adult and 1 Immature
5. 1 Adult and 2 Immatures
6. 2 Adults and 1 Immature
7. 2 Adults and 2 Immatures
8. 2 Adults and 3 Immatures
9. More than Listed Above

AGE OF YOUNG

1. Eggs
2. Downies
3. Partly Feathered
4. Nest Fledging
5. Flying Young

No. of Young ________

NEST DESTROYED

1. Nest Blown out of Tree
2. Nest Blown off Cliff
3. Nest too Large and Fell Off
4. Tree Blown Down
5. Road Building
6. Urban Development
7. Predation

APTOR NEST LOCATION

SPECIES Swainsons Hawk

NEST NR.

NEST ELEVATION 4000 ft

NEST LOCATED ON Tree (Cottonwood)

HEIGHT OF TREE OR CLIFF 30 ft

HEIGHT OF NEST ABOVE GROUND 28 ft

GENERAL AZIMUTH OF NEST EXPOSURE

All directions

ACTUAL AZIMUTH OF NEST EXPOSURE

All directions

MILEAGE TO NEAREST RIVER Arkansas North 35 miles

MAP

QUAD. MAP Lycan

T. 28S R. 42W

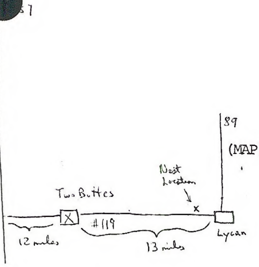
S. 34 ¼S. SE

MILES TO HUMAN DISTURB. 20 ft

TYPE OF DISTURBANCE Highway

NEST FRONTAGE

VEG. OF AREA Mostly wheat + corn cultivated.



(MAP)

(PHOTOGRAPH)

HOW TO FIND NEST S From Highway (US) 287 travel east on highway 116 through Two Bittes. From Two Butts go ~ 13.75 miles. Tree is located on north side right off road, ~ 1/2 mile west of Lycan

RAPTOR NEST SURVEY

Year	77	78	79	80	81	82	83	84	85	86	87
Nest Condition	2										
Activity at Nest	5,8,3										
Adults in Nest Territory	3										
Age of Young	unknown										
Number of Eggs	unknown										
Number Eggs Hatched	unknown										
Number Fledged											
Nest Destroyed	No										

NEST CONDITION

1. Good-New Material Seen
2. Fair-Old Material Only
3. Poor-Stable
4. Poor-Unstable
5. Remnant Only

ACTIVITY AT NEST

0. No Activity
1. Material added to Old Nest
2. New Nest Under Construction
3. Nest Found Since Last Survey
4. Adult with Nest Material
5. Adult on Nest
6. Whistling Adult
7. Adult on Nest Tree
8. Pair on Nest Tree
9. Pair on the Nest

ADULTS IN NEST TERRITORY

1. None Observed
2. 1 Adult at or Near Nest
3. Pair at or Near Nest
4. 1 Adult and 1 Immature
5. 1 Adult and 2 Immatures
6. 2 Adults and 1 Immature
7. 2 Adults and 2 Immatures
8. 2 Adults and 3 Immatures
9. More than Listed Above

AGE OF YOUNG

1. Eggs
2. Downies
3. Partly Feathered
4. Nest Fledging
5. Flying Young

No. of Young________

NEST DESTROYED

1. Nest Blown out of Tree
2. Nest Blown off Cliff
3. Nest too Large and Fell Off
4. Tree Blown Down
5. Road Building
6. Urban Development
7. Predation

[illegible] OR NEST LOCATION

SPECIES Great Horned Owl

NEST NR. ______ ______

NEST ELEVATION 4200 ft

NEST LOCATED ON Cliff

HEIGHT OF TREE OR CLIFF 100 ft

HEIGHT OF NEST ABOVE GROUND 75 ft

GENERAL AZIMUTH OF NEST EXPOSURE

South

ACTUAL AZIMUTH OF NEST EXPOSURE

South

MAP

QUAD. MAP Two Buttes Res

T. 28 S R. 46 W

S. 1 ¼S. NE

MILES TO HUMAN DISTURB. 100 yds

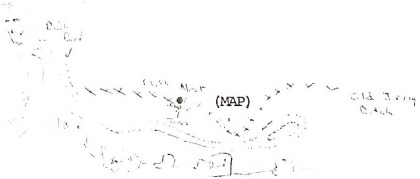
TYPE OF DISTURBANCE Picnic + Rec area

NEST FRONTAGE Faces South

VEG. OF AREA Cottonwood, willow, Sage, Yucca, [illegible] grasses + [illegible]

MILEAGE TO NEAREST RIVER Zero yds (Two Buttes Creek)

No nest material is visible. Young + adults could be seen between [illegible] the cliff behind cottonwood trees.



(MAP)

(PHOTOGRAPH)

HOW TO FIND NEST SITE From dam at Two Buttes Res. [illegible] [illegible] [illegible] [illegible] [illegible] creek in bottom. Follow [illegible] creek to point where [illegible] cliff on left. Nest is on back, [illegible] behind trees above [illegible] (5051) Old Irrigation Ditch.

RAPTOR NEST SURVEY

Year	77	78	79	80	81	82	83	84	85	86	87
Nest Condition	2										
Activity at Nest	3,5,9										
Adults in Nest Territory	3										
Age of Young	3										
Number of Eggs	2										
Number Eggs Hatched	2										
Number Fledged	2										
Nest Destroyed	No										

NEST CONDITION

1. Good-New Material Seen
2. Fair-Old Material Only
3. Poor-Stable
4. Poor-Unstable
5. Remnant Only

ACTIVITY AT NEST

0. No Activity
1. Material added to Old Nest
2. New Nest Under Construction
3. Nest Found Since Last Survey
4. Adult with Nest Material
5. Adult on Nest
6. Whistling Adult
7. Adult on Nest Tree
8. Pair on Nest Tree
9. Pair on the Nest

ADULTS IN NEST TERRITORY

1. None Observed
2. 1 Adult at or Near Nest
3. Pair at or Near Nest
4. 1 Adult and 1 Immature
5. 1 Adult and 2 Immatures
6. 2 Adults and 1 Immature
7. 2 Adults and 2 Immatures
8. 2 Adults and 3 Immatures
9. More than Listed Above

AGE OF YOUNG

1. Eggs
2. Downies
3. Partly Feathered
4. Nest Fledging
5. Flying Young

No. of Young______

NEST DESTROYED

1. Nest Blown out of Tree
2. Nest Blown off Cliff
3. Nest too Large and Fell Off
4. Tree Blown Down
5. Road Building
6. Urban Development
7. Predation

RAPTOR NEST LOCATION

SPECIES Golden Eagle

NEST NR.

NEST ELEVATION 4200 ft

NEST LOCATED ON Cliff East of Two Buttes Res

HEIGHT OF TREE OR CLIFF 100 ft

HEIGHT OF NEST ABOVE GROUND 85 ft

GENERAL AZIMUTH OF NEST EXPOSURE

South

ACTUAL AZIMUTH OF NEST EXPOSURE

South

MAP

QUAD. MAP Two Buttes Res.

T. [illegible] R. [illegible]

S. 1 ¼S. NE

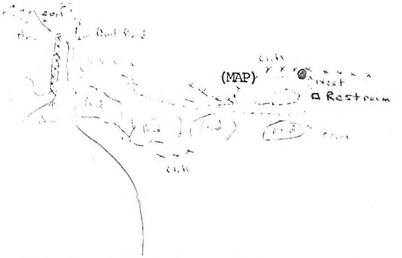
MILES TO HUMAN DISTURB. 100 yds

TYPE OF DISTURBANCE Picnic + Rec Area

NEST FRONTAGE Faces South

VEG. OF AREA Cottonwood, Willow, Sage, Yucca, Various grasses + annuals

MILEAGE TO NEAREST RIVER 300 yds to Two Butte Creek



(MAP)

(PHOTOGRAPH)

HOW TO FIND NEST SITE From Dam at Two Buttes Res follow dirt road east of the Res. Down to creek in bottom. Follow this road along the [illegible] turn around pt. Nest is located just to [illegible] right on cliff.

RAPTOR NEST SURVEY

Year	77	78	79	80	81	82	83	84	85	86	87
Nest Condition	2										
Activity at Nest	1,5,9										
Adults in Nest Territory	6										
Age of Young	3										
Number of Eggs	2										
Number Eggs Hatched	2										
Number Fledged	1										
Nest Destroyed	No										

NEST CONDITION

1. Good-New Material Seen
2. Fair-Old Material Only
3. Poor-Stable
4. Poor-Unstable
5. Remnant Only

ACTIVITY AT NEST

0. No Activity
1. Material added to Old Nest
2. New Nest Under Construction
3. Nest Found Since Last Survey
4. Adult with Nest Material
5. Adult on Nest
6. Whistling Adult
7. Adult on Nest Tree
8. Pair on Nest Tree
9. Pair on the Nest

ADULTS IN NEST TERRITORY

1. None Observed
2. 1 Adult at or Near Nest
3. Pair at or Near Nest
4. 1 Adult and 1 Immature
5. 1 Adult and 2 Immatures
6. 2 Adults and 1 Immature
7. 2 Adults and 2 Immatures
8. 2 Adults and 3 Immatures
9. More than Listed Above

AGE OF YOUNG

1. Eggs
2. Downies
3. Partly Feathered
4. Nest Fledging
5. Flying Young

No. of Young_________

NEST DESTROYED

1. Nest Blown out of Tree
2. Nest Blown off Cliff
3. Nest too Large and Fell Off
4. Tree Blown Down
5. Road Building
6. Urban Development
7. Predation

APPENDIX G

Critical Wildlife Habitat Sites in Baca County
(For Consideration During Oil & Gas Leasing Applications)

T. 28 S., R. 45 W., Sec. 4	Prairie dog habitat.
T. 28 S., R. 46 W., Secs. 4, 5, 6, 7, 10, 15	Within Division of Wildlife boundary for Two Buttes Reservoir.
T. 29 S., R. 42 W., Sec. 6	Prairie dog expansion habitat.
T. 29 S., R. 44 W., Secs. 19, 27, 29, 30, 34, 35	Critical waterfowl feeding area.
T. 30 S., R. 44 W., Sec. 9, 10, 11, 26, 27, 28, 34	Critical riparian & cottonwood habitat.
T. 30 S., R. 45 W., Sec. 21	Critical riparian habitat.
T. 31 S. R. 41 W., Sec. 6	Critical riparian habitat.
T. 32 S., R. 47 W., Secs. 4, 20, 22, 31	Critical prairie dog habitat.
T. 32 S., R. 49 W., Secs. 9, 16	Critical prairie dog habitat.
T. 33 S. R. 45 W., Secs. 4, 9, 15, 16, 18	Critical prairie dog habitat.
T. 33 S. R. 47 W., Secs. 6, 7, 9	Critical prairie dog habitat.
T. 33 S., R. 50 W., Secs. 6, 7, 8, 14, 15, 17, 18, 20, 21, 27, 23, 24, 28, 29, 30, 32, 33, 34	Critical habitat for many wildlife species. Secluded canyons, cliffs, and riparian sites.
T. 34 S., R. 41 W., Secs. 17, 19, 20, 21, 22, 27, 28	Critical riparian habitat. Several rare birds seen here.
T. 34 S. R. 42 W., Secs. 11, 12, 13, 22, 23, 24, 26, 27, 28, 29, 32, 33, 34	Same as above.
T. 34 S., R. 43 W., Secs. 8, 9, 16, 17, 25	Historic lesser prairie chicken booming grounds.
T. 34 S., R. 45 W., Sec. 26	Historic lesser prairie chicken booming grounds.
T. 34 S. R. 46 W., Secs. 16, 17	Suitable lesser prairie chicken habitat.
T. 34 S., R. 47 W., Secs. 6, 7, 9, 13, 15, 16, 17, 19, 20, 22, 29, 30	Critical lesser prairie chicken and antelope habitat.
T. 34 S., R. 49 W., Secs. 19, 20, 21, 22, 27, 28, 29, 31, 32, 33, 34, 35	Critical canyonland habitat (cliffs, riparian, mountainous, etc.)
T. 34 S., R. 50 W., Secs. All except 1, 2, 10, 11, 12, 24, 25	Critical canyon habitat.
T. 35 S., R. 42 W., Secs. 4, 5, 6, 7, 8	Critical lesser prairie chicken habitat and excellent riparian habitat.
T. 35 S., R. 43 W., Secs. 2, 3, 11, 12, 13, 14	Critical lesser prairie chicken and riparian habitat.
T. 35 S., R. 45 W., Sec. 9	Potential expansion range for lesser prairie chicken.

Critical Wildlife Habitat Sites in Prowers County
(For Consideration During Oil & Gas Leasing Applications)

T. 27 S., R. 44 W., Secs. 8, 9, 29	Prairie dog town expansion range.
T. 27 S., R. 45 W., Secs. 31, 33	Prairie dog expansion range and riparian habitat.
T. 27 S., R. 46 W., Secs. 2, 11	Prairie dog expansion range.
T. 27 S., R. 47 W., Secs. 28, 29, 30	Prairie dog expansion range.
T. 26 S., R. 41 W., Sec. 19	Prairie dog expansion range.
T. 26 S., R. 42 W., Sec. 6	Riparian habitat, deer, and antelope cover.
T. 26 S., R. 43 W., Secs. 1, 19, 27, 28	Riparian habitat and prairie dog expansion range.
T. 26 S., R. 47 W., Sec. 4	Prairie dog expansion area.
T. 25 S., R. 45 W., Sec. 18	Prairie dog expansion area.
T. 24 S., R. 41 W., Secs. 7, 8	Critical lesser prairie chicken habitat.
T. 24 S., R. 44 W., Secs, 27, 34	Critical riparian habitat.
T. 23 S., R. 41 W., Sec. 32	Critical lesser prairie chicken habitat.
T. 23 S., R. 43 W., Secs. 20, 25, 26, 27, 28, 29, 35	Potential lesser prairie chicken habitat.
T. 23 S., R. 44 W., Secs. 9, 14, 15, 21	Potential lesser prairie chicken habitat.